

# CANADIAN GEOGRAPHICAL JOURNAL

DEC 29 1948

Vol. XXXVII

No. 6

DECEMBER 1948

PRICE 35¢



A. Y. JACKSON, R.C.A.

"April, Petite Rivière"

Courtesy Watson Art Galleries, Montreal

## CONTENTS

"DECEMBER" (POEM)

CANADA'S WESTERN ARCTIC

ALONG THE ROAD TO BETHLEHEM

SOME CAMBRIDGE COLLEGES

CANADIAN WILD ANIMALS (Part I)



## THE CANADIAN GEOGRAPHICAL SOCIETY

OTTAWA, CANADA

Memorandum to Members

### GIFT MEMBERSHIPS

This memorandum is addressed not to the one thousand members of our Society who remember their friends far and near by sending them a gift membership in the Society, which includes twelve issues of Canadian Geographical Journal, but to those other ten thousand members who just have not got round to it.

Today Canada is one of the relatively peaceful lands -- a land of open spaces, of beauty, of bounteous harvests; a land of freedom and opportunity. It is this land and its people, primarily, that the Society, through its Journal, presents to the world in a graphic pictorial way. Articles by authorities on every aspect become reference works of lasting value.

The dissemination of this knowledge is the business of the Society, is indeed the business of every Member of the Society. And rather a happy business at that, if we are to judge from the reactions of recipients of gift memberships.

The Journal has become a family interest. The busiest men and women take time to read it, the students find in it material for their essay tests, and the younger group delight in the pictorial presentation.

Your gift is recalled twelve times a year, with each issue as it comes fresh off the press. The procedure for providing gift memberships is simplicity itself: complete the enclosed form, or send the name and address of each new Member to the Society, with \$3 for members in Canada and British Commonwealth countries, \$3.50 for other countries in North and South America, or \$4 for all other countries. A Christmas card will be sent to the recipient of your gift naming you as donor. Unfortunately, increased costs of production have at last compelled us to raise the price and, after January 1, 1949, the membership fee will be \$4 in all countries.



Executive-Secretary

# CANADIAN GEOGRAPHICAL JOURNAL

Published monthly by  
**THE CANADIAN GEOGRAPHICAL SOCIETY**  
36 Elgin Street, Ottawa

*Editor - GORDON M. DALLYN - Assistant Editor - MALVINA BOLUS*

This magazine is dedicated to the interpretation, in authentic and popular form, with extensive illustrations, of geography in its widest sense, first of Canada, then of the rest of the British Commonwealth and other parts of the world in which Canada has special interest.



The articles in this Journal are indexed in the *Reader's Guide to Periodical Literature* and the *Canadian Periodical Index* which may be found in any public library.

The British standard of spelling is adopted substantially as used by the Dominion Government and taught in most Canadian schools, the precise authority being the Oxford Dictionary as edited in 1936.

Address all communications regarding change of address, non-delivery of Journal, etc., to the publication office, 1,000 St. Antoine St., Montreal, Canada, giving old and new address. On all new memberships, the expiry date will be printed on wrapper containing starting number. This will constitute a receipt for subscription.

Membership dues of The Canadian Geographical Society, which include postpaid delivery of the Journal, are \$4.00 per year in any country, payable at par in Ottawa.

*Member Audit Bureau of Circulations*

#### SPECIAL REPRESENTATIVES:

*Ontario and Quebec: F. A. DALLYN*  
Toronto office — 21 King Street, E.  
(Tel. EL. 2863)

*Montreal office — 1,000 St. Antoine Street. (Tel. LA. 5566)*

*Europe: S/L W. H. CORKILL, M.B.E.*  
The Mead, West Dumpton Lane, Ramsgate, Kent, England.

#### CONTENTS

DECEMBER, 1948 • VOLUME XXXVII • NUMBER 6

COVER SUBJECT:—“April, Petite Rivière”  
by A. Y. Jackson, R.C.A.  
Courtesy Watson Art Galleries, Montreal

	Page
“DECEMBER” . . . . .	238
Poem by WILSON MACDONALD	
CANADA'S WESTERN ARCTIC . . . . .	242
by J. LEWIS ROBINSON	
ALONG THE ROAD TO BETHLEHEM . . . . .	260
by ERIC HARDY	
SOME CAMBRIDGE COLLEGES . . . . .	268
by EDGAR W. PITTS	
CANADIAN WILD ANIMALS—Part 1 . . . . .	278
by W. V. CRICH	
CANADIAN GEOGRAPHICAL JOURNAL INDEX, 1948 . . . . .	V
EDITOR'S NOTE-BOOK . . . . .	VII

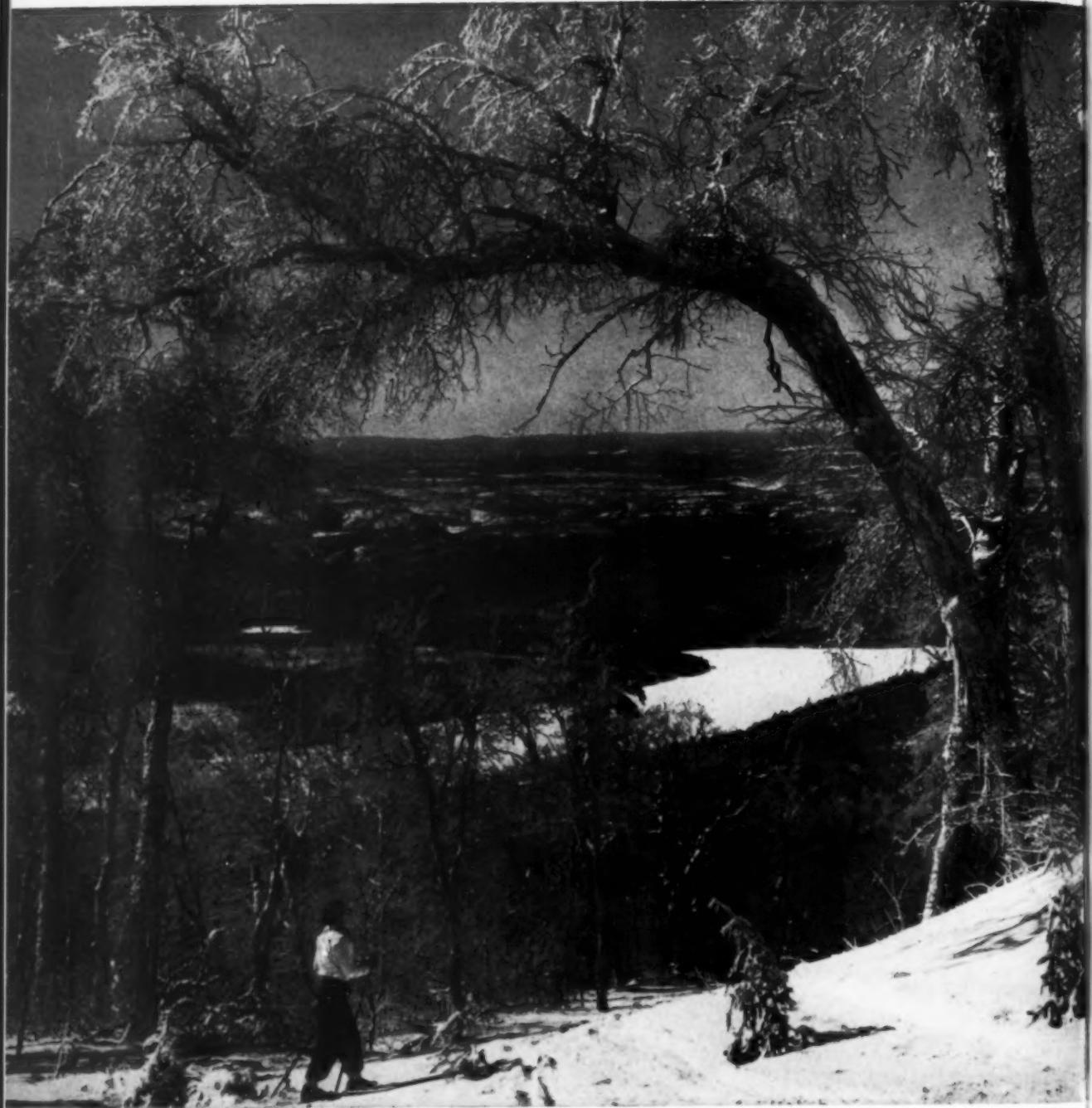


CONTENTS OF THIS JOURNAL ARE COPYRIGHT

AUTHORIZED AS SECOND CLASS MAIL, POST OFFICE DEPARTMENT, OTTAWA

PRINTED IN CANADA





"the silver- etched etchings of the frost"

## DECEMBER

Pale consort of white silence, priestess cold  
in that bare temple of the dying sun,  
brave guardian of the ashes of the year,  
dear patron of the hueless and the old,  
sad mourner at the last autumnal bier!

Is then the year undone —  
the year that lost its singing leaf and stream —  
because from thy cold loins there is no birth?  
Nay, for tomorrow's roses are the dream  
of these chilled, barren acres of the earth.

I see thee on the ladder's lowest rung,  
thou uncomplaining stoic of brave time,  
watching the last seeds through the hour-glass glow,  
or leading wild brawlers that are sung  
by the white chorus of thy lyric snow.  
What musicker can mime  
the tempo of thine etudes? Too thou art  
archivist of the manuscripts of light;  
and bridal wreaths are ever on thy bair  
throughout thy wedding journey with the night.

June hath her deep regret that she must pass,  
and rich September, in her opulence, mourns  
for that red largess which she cannot hold;  
but there's no reaper mowing in thy grass,  
nor thieving singers, eager for thy gold;  
and thy thin, frosted hoofs  
surpass the trumpets of the fruited hours,  
muted by vines and muffled by the leaves —  
bronze barricades in labyrinthine bowers  
through whose deep maze of color autumn grieves.



Bronze barricades in labyrinthine bowers  
through whose deep maze of color autumn grieves.

Thou art the first of all the months to begin  
that arduous upward climbing back to June,  
back to the blossoms richly scented Syres,  
back to the scarlet rose and yellow whin,  
back to a host of hymeneal choirs  
warming the world with sunne.

Though not one leaf of green is in thy hands  
thou art the true beginning of the year,  
and from thy lengthened nights and frozen lands  
came Ceres' harvest and Apollo's spear.

Carver of stalactites, mother of that skill  
which limmed by night upon my window-pane  
the silver-crayoned etchings of the frost,  
and robed the pines upon this choric hill  
with cunning which the ages have not lost!  
Is sorrow then in vain?

Mourn not for these dark days; the heavens are bold,  
and fiery pageants march the evening sky;  
and when the last pale amber swoons in cold  
the iceberg of a winter's night floats by.

Wilson MacDonald



N.W.T. and Yukon Services

*Eskimos leaving a spring sealing camp on the sea-ice near Coppermine.*

## **Canada's Western Arctic**

by J. LEWIS ROBINSON

**C**ANADA HAS VAST Arctic regions, comprising almost one-third of her area. Physical conditions and human adaptations vary sufficiently within this area to indicate a division into three sub-regions. The Eastern Arctic is best known. It is approached from the Atlantic Ocean or Hudson Bay. The Far Northern Arctic Islands, lying north of the wide channels

between Lancaster Sound and M'Clure Strait, are separated from the Arctic Islands to the south of them. Because of their inaccessibility and lack of inhabitants they are being considered as a separate region. The Western Arctic, which has little contact with the other Arctic regions mentioned, is a sparsely populated section, only recently settled by whites.

*Magnetic Pole survey party setting up camp on the tundra around a lake on northeastern Prince of Wales Island, August 1947.*

J. L. Robinson



## CANADA'S WESTERN ARCTIC

The Western Arctic comprises the southwestern Arctic Islands and that part of the mainland of northwestern Canada lying north of the tree-line. The region includes a narrow strip of the coast of Yukon Territory and offshore Herschel Island, the mainland tundra coast of northern Mackenzie District east of the Mackenzie River delta, and the northern coast of Keewatin District as far eastward as Boothia Peninsula and the 95th meridian. The islands included in the Western Arctic region are Banks, Victoria, King William, and Prince of Wales.

This rectangular region is a treeless Arctic territory. Its physical appearance is similar to that of many parts of the larger Eastern Arctic which forms the northeastern fifth of Canada, but it is differentiated from the latter by method of entry. Transportation lines, supplies, and communication in the Western Arctic come generally from the south and west. There is very little intercourse between the two southern Arctic regions. The Western Arctic is also differentiated from the nearby sub-Arctic and forested Mackenzie Valley, which, in the Northwest Territories, extends from Fort Smith to Aklavik. The physical character and problems of the Mackenzie Valley are quite different from those of the Western Arctic.

There are contrasts within the Western Arctic region. The northern parts of the islands are uninhabited by whites or Eskimos; the Arctic mainland and southern sections of the islands have a thinly scattered population of migratory Eskimos and a few white settlements. The Eskimos who live near the delta of Mackenzie River differ greatly in culture and equipment from the primitive natives of Boothia Peninsula and Back River. Transportation difficulties and facilities vary throughout the region. Transportation problems encountered along the open coast of Beaufort Sea and in Amundsen Gulf are different from those met in the almost-enclosed seas of Coronation Gulf and Queen Maud Gulf. Still different transportation difficulties and ice conditions are met in the eastern part of the region

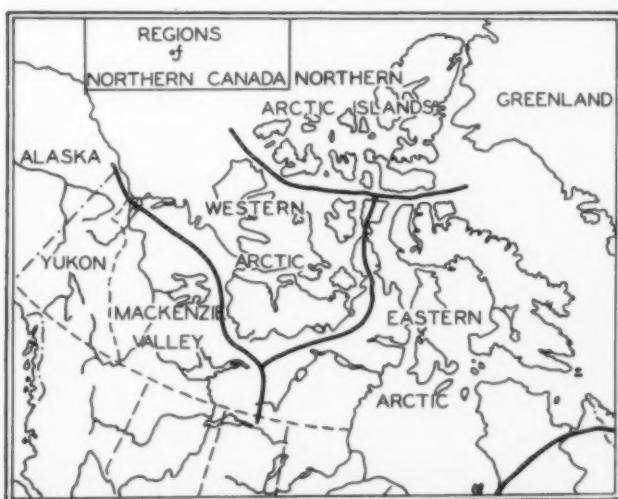
north of King William Island. These contrasts illustrate the diversities within a region which has geographical unity.

### History

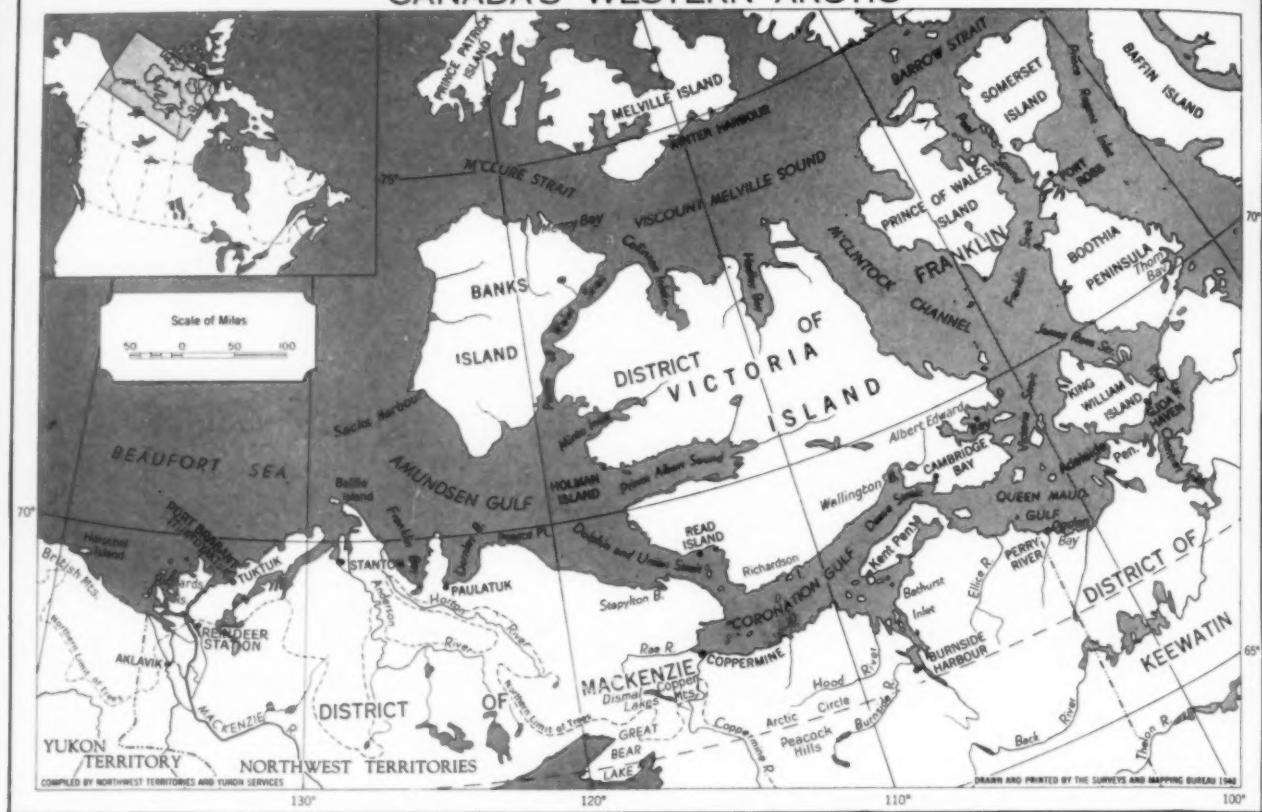
The region was first entered by Samuel Hearne in 1771, when he travelled overland from Churchill, Manitoba, to the mouth of Coppermine River. He was led by Indians who had been using native copper found in the area. No further exploration was carried on until 1821 when John Franklin and a party of British naval officers descended the rapids of Coppermine River, and explored eastward along the coast. Franklin's second expedition in 1826 mapped the western part of the mainland coast from the Mackenzie River Delta to the mouth of Coppermine River. The remainder of the Western Arctic mainland coast was defined by Thomas Simpson in 1838-39 when he proceeded eastward along the coast to beyond Chantrey Inlet.<sup>(1)</sup>

The Western Arctic islands were placed on the maps only about a century ago. Part of King William and Boothia Peninsula were mapped by James Ross in 1831. Sections of the southern coasts of King William and Victoria Islands were first travelled by Simpson on his return trip in 1839. The impetus to exploration came after 1845 in the search for Sir John Franklin's lost naval expedition. One of the searchers, John Rae, who also made notable trips in the Eastern Arctic, covered the whole south coast of Victoria Island for the first time in 1851.

(1) M. J. and J. L. Robinson, Exploration and Settlement of Mackenzie District, N.W.T.—*Canadian Geographical Journal*, June-July, 1946.



## CANADA'S WESTERN ARCTIC



J. Jaworski

The coasts of Banks Island and western Victoria Island were mapped by the expedition under Richard Collinson in 1850-54. Collinson, in H.M.S. *Enterprise* explored much of the region north and west of Amundsen Gulf, and penetrated to the north end of Prince of Wales Strait between Victoria and Banks Islands. His lieutenant, R. M'Clure, in H.M.S. *Investigator* rounded the western coast of Banks Island and finally abandoned his ship after spending two winters ice-bound in Mercy Bay, northern Banks Island. The coast of northwestern Victoria Island was followed by sledge parties under R. J. Wynnatt in 1851.

These explorations sketched in the major land masses of the Western Arctic. For 50 years, however, the northeastern and eastern coasts of Victoria Island remained unknown and unvisited. In 1905, G. Hansen from the Amundsen magnetic expedition wintering on King William Island, travelled northward by sledge, exploring about 200 miles of the east coast of Victoria Island. Finally during

the winter of 1915, the north coast was mapped by S. Storkerson of the Canadian Arctic Expedition. For years a 100-mile stretch of the northeastern coast remained unseen by the white man. It was finally sketched by officers of the Royal Canadian Air Force in 1946, and proved to be a large island. No ship has ever navigated along either the north or northeast coasts of Victoria Island, and M'Clure's vessel was the only large one to pass along the west and north coasts of Banks Island.

The northwestern coast of Prince of Wales Island was mapped by British explorers E. Ommanney and S. Osborne in the spring of 1851. At the same time a subsidiary party under W. Browne explored the northeastern coast. Captain W. Kennedy, who was also searching for Franklin in 1851-52, was the only man to cross the interior of the island. The southern coasts were mapped by A. Young, of L. M'Clintock's expedition, in 1859. Except for occasional visits by Eskimos to the southeast

coast in recent years, the island remained unvisited and little known. Its interior was described and the coasts more accurately mapped during the summer of 1947 by a joint aerial expedition of the Royal Canadian Air Force and the Department of Mines and Resources.

The first white residents in the Western Arctic were whalers who began wintering at Herschel Island in 1890. Early in the present century they were operating in Beaufort Sea from a second base at Baillie Island. Some of the whalers carried on trading activities with the Eskimos, and before long other traders were established in the Western Arctic. The first recorded trading post was operating on Victoria Island in 1906, and a second one was opened in 1911 at Bernard Harbour, on the nearby mainland.

The Hudson's Bay Company and independent traders penetrated eastward into primitive Eskimo country. By 1920 there were several trading posts operating in the Coronation Gulf area. During the next decade traders extended their operations farther into the interior of the region, establishing posts along the south coast of Queen Maud Gulf, and on King William Island. During the same period (1920-30) police detachments and mission churches were opened at most of the posts. These additions gave an atmosphere of permanence to the settlements. This eastward migration of post settlement illustrates how recent is permanent contact of the Eskimo with Europeans.

The period 1930-40 was one of withdrawal. The region had too many trading posts for the few Eskimos living there. Many posts were closed or abandoned, particularly those of independent traders. At the present time there are only three major settlements in the Western Arctic, namely at Coppermine, Cambridge Bay, and Tuktoyaktuk. Smaller centres are occupied at Burnside Harbour, Read Island, and Holman Island. Mission stations are located at Stanton and Paulatuk. Trading outposts operate at Perry River and Gjoa Haven.

#### Geology and Topography

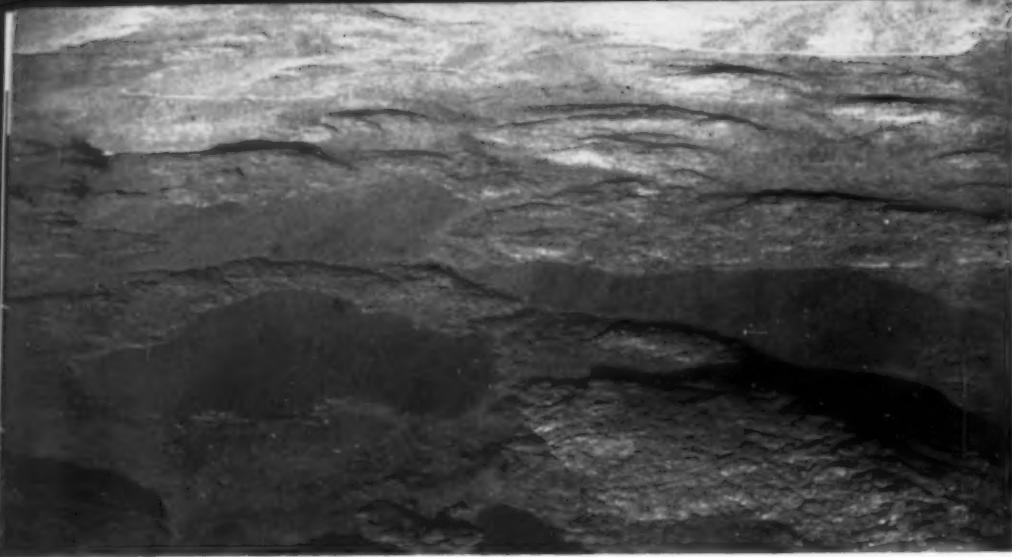
Topographic features in the Western Arctic are largely controlled by the geological structure and composition of the underlying rocks. The areas of Precambrian rock generally have rough and locally rugged topography. The lowlands and plains are developed over sedimentary rocks. The prevalence of raised beach terraces along most of the Arctic coasts is a result of recent geological events.

On the Western Arctic mainland there are very few outstanding topographic features. The coast of Yukon Territory is a narrow lowland about ten miles in width fronting the abruptly-rising Richardson and British Ranges. Numerous entrenched streams cut across the lake-dotted plain. East of the Mackenzie delta the coast is very low and swampy. Many small, linear lakes have been cut off from the sea by former beaches. The inland country is a rolling plain with so many lakes that there is almost as much water as land.

The coast east of Baillie Island has steep bluffs rising about 200 feet directly from the water. The Smoking Mountains, so-called because of burning coal seams, are abrupt hills of about 500 feet altitude west of Franklin Bay. The little known country inland between Anderson and Horton Rivers is a rolling tundra plain, well covered with small lakes.

The coast between Pearce Point and Coppermine is of two types. Some parts are low, steep walls of rock rising 50 to 200 feet from the water, whereas other sections are sloping lowlands marked with the parallel ridges of former beach-lines. Elevations increase inland to an interior plateau of about 1,000 feet.

Like all northern regions, the Arctic mainland is underlain by permanently frozen sub-soil. During summer this frozen layer melts for about a foot in depth beneath the tundra cover. Since there is no underground drainage the water collects in every low depression, forming shallow, irregular-shaped lakes. The mainland east of Coppermine River is literally covered with these in-



Typical barren, rocky country on the Arctic mainland of Canada northeast of Coppermine River.

numerous lakes. Separating the lakes are low, rounded ridges of Precambrian rock, or low, flattened domes well-covered with tundra vegetation. An occasional long twisting esker is a reminder of the denuding action over this region during the Ice Age.

A few ranges of hills rise above the general plateau level of the Canadian Shield. South of Coppermine settlement the Copper and September Mountains are linear ranges of about 2,000 feet altitude. The mountains have distinctive south-facing escarpments, separated by narrow, drift-filled valleys. The ridges are composed of a series of superimposed flows of basaltic lavas which have not weathered as rapidly as the softer rock in the valleys. Similar rocky ridges are found above the plateau northeast of Point Lake, on the Coppermine River. Farther to the east, near the headwaters of Burnside River, the Peacock Hills are sharp-pointed ridges rising about 1,000 feet above the rolling tundra.

Bathurst Inlet is one of the most scenic regions in the Western Arctic. The long inlet extends 130 miles into the rugged Canadian Shield, and is lined with steep hills rising about 1,000 feet directly from deep water. Numerous large and small rocky islands are scattered across the inlet. Picturesque harbours and coves are half-hidden behind narrow openings in the rocky coast.

Panorama of lowland topography near Cambridge Bay. The surface is covered with disintegrated slabs of sedimentary rock, and has only scattered bits of vegetation. Mount Pelly, in the distance to the left, is the only topographic feature above the lowland of southeastern Victoria Island.

Photographs by J. L. Robinson

Elevations decrease east of Bathurst Inlet. The rocky Precambrian hills become lower; the grassy valleys widen; countless lakes continue to be characteristic. Kent Peninsula is a lowland, underlain by flat-lying sedimentary rock. Another lowland, with few known outcrops, extends south of Queen Maud Gulf to Precambrian rock ridges near Back River. The same type of low, flat coast continues through Adelaide Peninsula and around to western Boothia Peninsula. Shallow water and numerous islands offshore make boat travel difficult along this coast in summer, and swampy, lake-covered land discourages movement on foot. In winter the flat land and sea-ice merge together to form a broad, snow-covered plain, ideal for travel by dog-team and sledge.

Boothia Peninsula rises abruptly above the level tundra plain, along the west coast, to rocky ridges which trend north-south. Narrow, linear valleys separate the hills.



rocky  
arctic  
nada  
oper-

*Lowland tundra cover of low bushes, shrubs, grasses and moss on an island in Point Lake, Coppermine River.*



The same rugged topography continues northward along the west coast of Somerset Island. Precambrian rock forms the high hills on northeastern Prince of Wales Island, and may constitute the rocky islands off the east coast.

The Western Arctic islands have both lowlands and plateaux. The lowland basin rimming the eastern end of the region extends offshore to include all of King William Island, southern Prince of Wales Island, and eastern and southern Victoria Island. The lowland, measured by geological time, has recently emerged from the sea. All the coasts are marked by beach-lines which record the comparative length of the emergence. The gravel beaches are the chief topographic characteristic of the water-soaked lowland. A few isolated hills of 300 to 600 feet, such as flat-topped Mount Peily near Cambridge Bay, are outstanding features.

Western and northern Victoria Island, northern Prince of Wales Island, and most of Banks Island are plateaux or hilly. Highest elevations reach only to about 2,000 feet. Western Victoria Island, north of Prince Albert Sound, has a Precambrian base similar to that forming the ridge and valley topography of the Copper Mountains on the mainland. The geology of Banks Island is known only sketchily, but the central grassy plateau may be of younger rock, possibly post-Silurian in age. The western part of the island is a sloping tundra lowland crossed by many large and long rivers.

The topographic character of the Western Arctic has resulted in certain human and animal adaptations. The level or rolling Canadian Shield of the mainland is covered with ample vegetation which supports thousands of Barren Ground caribou. The presence of these large animals has enabled



*The former beach-lines around the slopes of Mount Pelly (650 feet), Victoria Island, record the emergence of this area since glacial times.*



*Typical lake-covered lowland Western Arctic. A modified esk Bay in the abo er s dist*

several hundred Eskimo to live in the region, roaming over the tundra in search of game and fur. The lowlands of the islands in the eastern part are not as adequately covered with vegetation—in fact, southern and central Prince of Wales Island is barren. Caribou are seldom found on these islands. They are, therefore, either uninhabited or the resident natives obtain their food from the sea. The rough, hilly regions are usually barren rock. Since there is little native game, they are seldom visited.

#### **Climate**

The Western Arctic is continuously cold throughout the winter.<sup>(2)</sup> The coldest

(2) See Weather and Climate of the Northwest Territories by J. L. Robinson, *Canadian Geographical Journal*, March, 1946.

*Aerial view of the "mountainous" topography of Wollaston Peninsula, southwestern Victoria Island. The bare, rocky hills rise to elevations of about 2,000 feet.*

• A. L. Washburn



*The rugged coast of Minto Inlet, wes by columnar structure in traproc by weathered rock which has bro*



...d lowland  
modified esk  
Bay in the  
above the frozen ground of the  
er stretches towards Cambridge  
distance.



A. L. Washburn  
*Aerial view of the distinctive polygon structure which develops in the tundra cover of the Western Arctic, southwestern Victoria Island.*

which are known in the interior land mass of northwestern Canada. The usual winter minimum at Holman Island, on Amundsen Gulf, is  $-37^{\circ}\text{F}$  and the lowest ever recorded is  $-45^{\circ}\text{F}$ . Much lower temperatures are known in the Mackenzie Valley, Yukon, northern Prairies, and northern Ontario and Quebec. The latter regions, however, also have warm "spells" which are rare in the Western Arctic.

Coppermine, to the east of Holman Island, and farther into the interior of Canada, can be colder in winter. The average winter minimum is  $-48^{\circ}\text{F}$ , and the record low is  $-54^{\circ}\text{F}$ . Cambridge Bay has the lowest

minimum temperatures known in the Canadian Arctic. Nearly every winter readings of  $-54^{\circ}\text{F}$  are recorded and the extreme minimum was  $-63^{\circ}\text{F}$ . Even these temperatures are not as low, however, as the  $-70^{\circ}\text{F}$  of northern Alberta,  $-79^{\circ}\text{F}$  of Mackenzie Valley, and  $-81^{\circ}\text{F}$  of western Yukon.

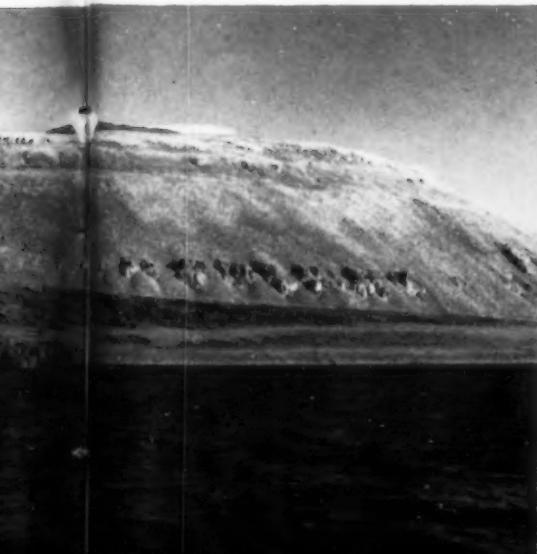
Since most of the Western Arctic settlements are located at about 69 degrees North latitude they have about one month of 24-hour darkness during the winter. Even this darkness is brightened by a twilight glow on the southern horizon, reflections from the snow, and light from the stars and moon. Conversely, there are 24 hours of

into Inlet, western Victoria Island, formed  
n trap rock. Steep talus slopes are formed  
which has broken off from the cliffs.

A. L. Washburn

The red sandstone escarpment which rises abruptly above a narrow lowland along the west side of Browne Bay, eastern Prince of Wales Island. The plateau is about 500 feet above sea level.

J. L. Robinson





*Winter conditions at Terror Bay, south-western King William Island. Snowfall is not heavy, and strong winds over the low-land result in snow dunes forming on the sea-ice.*

A. L. Washburn

daylight from the latter part of May to the end of July. During this time the sun circles low in the sky, dipping down towards the northern horizon.

Spring comes quickly in May when the days lengthen. Snow melts from southern slopes on the mainland. Average monthly mean temperatures jump 20 degrees between April and May. Summer begins in July when the ice breaks up along the coasts and in the lakes.

Monthly mean temperatures do not rise above 50°F. anywhere in the Arctic. In the Western Arctic during July and early August afternoon temperatures may rise above 60°F., and drop to about 40°F. during the low sun period, or evening. The extreme maximum recorded at Holman Island and Cambridge Bay is 75°F. Coppermine, which occasionally receives warm air masses from the mainland in summer, has recorded an extreme temperature of 87°F. This is the highest temperature ever recorded in the Canadian Arctic, but is not characteristic.

As in all northern regions, precipitation is not heavy in the Western Arctic. About 10 inches are recorded annually on the western mainland stations, half of which falls as rain during the four warmest months. About seven inches of precipitation are recorded at the Arctic Islands stations, one-third of which comes as rain during July and August. The remaining precipitation is snowfall, which, however, is very difficult to record accurately in the Arctic because of frequent drifting.

These climatic characteristics indicate that climate greatly limits occupations in the Arctic. Because of cool summer temperatures there is no possibility of normal agriculture in the region. For the same reason, trees do not grow and there can be no forestry. The Eskimos have adapted themselves to the continuous cold temperatures of winter by wearing warm, fur clothing, made from the skins of native animals, and by living in dome-shaped snowhouses, made from the ample surrounding snow cover. White men who come into the region to live have to import lumber for their homes, and most of their food. Climate thus places a high cost factor upon any white settlement.

#### **Ice Conditions**

Typical of other Arctic regions, one of the main problems of accessibility in the Western Arctic is combatting unpredictable ice conditions. For nine to ten months the coasts are ice-bound with land-fast ice, and the open gulfs off Beaufort Sea are jammed with heavy pack-ice from the shifting mass in the Arctic Ocean. Navigation is possible during the short open season when the ice moves away from the open coasts, and melts in the enclosed seas. The length of that season and the degree of accessibility vary greatly from year to year.

Rivers begin to break up early in June on the Arctic mainland. Their warming waters loosen the ice along the coast, and gradually widen cracks in the harbour ice. The loose floes are shifted about with the wind along the mainland coast during late June or early

July until finally a strong off-shore wind moves the ice out of the bays and inlets into the moving mass in the channels. This break-up comes later in July along the coasts of the Western Arctic islands.

Small lakes on the mainland break up around the end of June and larger lakes are ice-free by the middle of July. On northern Victoria and Banks Islands large lakes may still be frozen over early in August.

After the harbours are free of ice, there is a period of a few weeks before the floe ice is sufficiently broken for navigation along the coast. The open coast of Beaufort Sea, east of the Mackenzie delta, usually has a strip of open water along the shore by early August. At any time during the summer, however, strong northerly winds may push the heavy floes southward against the coast.

Coronation Gulf usually has enough open water for navigation by the end of July. The floes move about with the winds until they melt in the central part of the gulf. Strong north winds during this time, however, may block the south coast harbours. Shallow Queen Maud Gulf has ice until the latter part of August. Northerly winds bring additional floes southward through Victoria Strait from ice-packed M'Clintock Channel.

North of King William Island there is no ice-free season. Heavy polar ice from M'Clintock Channel pushes southward

throughout the year. In some years the ice off the west coast of Boothia Peninsula is broken up enough to permit navigation through the floes for a few weeks at the first of September. North of Banks and Victoria Islands heavy polar ice brought in from the Arctic Ocean packs the channels and pushes against the steep coasts throughout the year.

Early in September the lakes in the northern parts of the region begin to freeze over. By the end of the month small lakes on the mainland generally have an ice-cover. Towards the end of September or early in October ice forms across the inlets and bays, and begins building out from the coast. By the end of November or early in December, Coronation and Queen Maud Gulfs are frozen over.

Ice conditions in the Western Arctic are difficult to predict because seasons vary, and ice movements are further controlled by local winds. Ice does increase the inaccessibility of the region, and is one reason for the contrast in development between this region and the nearby sub-Arctic Mackenzie Valley.

#### Transportation

Water transportation facilities are limited in the Western Arctic. The transportation system operates during the short and indefinite open season primarily to bring supplies to the few settlements scattered

*Former beach-lines which have been formed during glacial times when the Arctic islands were at a lower level. These ridges are a means of measuring the rate of emergence since the melting of the continental ice-cap. The buildings in the background are the former trading post on Wilmot Island, Bathurst Inlet.*

A. L. Washburn





*Loose, broken pack-  
ice surrounding the  
Tasmania Islands,  
off the west coast of  
Boothia Peninsula, in  
late August 1947.*

J. L. Robinson

along the coasts. In the case of the Hudson's Bay Company and other traders, white fox pelts make up the only return cargo. The region has few resources and few people to need an elaborate transportation system.

Three schooners carry the bulk of the freight in the region. At present there are the 80-ton *St. Roch* of the Royal Canadian Mounted Police, the 150-ton *Fort Ross* and smaller *Nigalik* of the Hudson's Bay Company, and the 40-ton *Lady of Lourdes*, a Roman Catholic mission boat. Small schooners of about 25-ton capacity are owned by independent traders or Eskimos and make irregular trips throughout the region. In all cases schedules are elastic and are controlled by current ice conditions. Routes are more definite since the settlements are few, but the

sequence of stops may sometimes be changed to take advantage of favourable ice conditions.

The transhipment point for Western Arctic freight is Port Brabant (Tuktoyaktuk). Supplies are brought down Mackenzie River by flat-bottomed river boats and barges, which first reach the Arctic around the middle of July. Freight is transferred to Arctic schooners which start out along the coast early in August. Formerly supplies were imported around the Alaskan coast. With the exception of periodic trips by the *St. Roch*, however, this practice has been discontinued, because of the uncertainty of ice conditions off the Alaskan coast.

The coastal vessels move eastward to their destinations in Amundsen and Coronation Gulfs. None of the larger ships now proceeds east of Cambridge Bay. Supplies for the isolated outposts at Perry River and Gjoa Haven are carried across island-studded Queen Maud Gulf by small Eskimo-owned schooners. One or two trips can be made in the summer, depending upon the ice season and the amount of supplies necessary. The vessels usually winter somewhere in the region, preferably returning to Tuktoyaktuk. The *St. Roch*, however, serves as a "floating police detachment" in the winter, being frozen in at a previously-selected harbour, from which the surrounding region may be patrolled by the officers of the vessel.

Air transportation is irregular in schedule in the Western Arctic. Only two regular



*At Tuktoyaktuk (Port Brabant), transhipment point; Hudson's Bay Company's schooner *Fort Ross* (on right) which supplies their trading posts, and stern-wheeler *Distributor* (on left) which pushes flat-bottomed boats down the Mackenzie River.*

J. Jaworski

*R.C.A.F. Canso, and Department of Mines and Resources survey party setting up camp on the grassy tundra at Point Lake along the Coppermine River.*

J. L. Robinson



flights in July and January are made into Coppermine for mail. During the summer, however, there are usually chartered aircraft or government planes flying in the region. The airstrip at Cambridge Bay is the only permanent landing field at present. Most planes are float or ski-equipped and can land in the harbours or on the innumerable lakes. During winter it has been found that wheeled-planes can land safely on the thick and smooth harbour ice at most posts.

Local winter transportation is by dog-team and sledge. Dogs are hitched in tandem in the Western Arctic, unlike the fan-hitch characteristic of the Eastern Arctic where the sea-ice is generally rougher. Winter travel over the smooth sea-ice, or along low, snow-covered coasts is relatively easy in the Western Arctic. The mobility of the Eskimo for trapping or visiting usually depends upon the number and health of his dogs.

#### Natural Resources

Compared with the nearby Canadian Northwest the Western Arctic has few known resources and development faces many difficulties. With agriculture and forestry impossible, the region has only the minerals beneath the rocky surface and the animal life on land or in the sea.

#### Minerals

Copper was one of the reasons why the first white man, Samuel Hearne, entered the Western Arctic. Although it was used for generations by both Eskimo and Indian, it was not until 1911 that scientific investigation

*Heavy polar pack-ice jamming M'Clintock Channel from shore to shore in late August 1947. These floes were several miles across, with very little open water. Patches of white snow lay on top of blue ice. The dark areas are water.*

J. L. Robinson

tions were made of the Coppermine River deposits. These reports indicated low grade deposits, although almost pure copper, which had been used for Eskimo weapons and utensils, could be found in small quantities. Low-grade copper deposits were also reported from Bathurst Inlet by geologists of the Canadian Arctic Expedition 1913-17. More intensive prospecting had to await the use of aircraft in order to take full advantage of the short open season when the exposed rock was snow-free.

The copper-bearing regions were examined carefully by two large mining companies in 1929 and 1930. Although numerous claims were staked, the deposits proved of too low a grade to withstand the high costs of transportation to the area. The claims have since lapsed as undeveloped. In 1943, with copper in demand and prices higher, the





Precambrian rock rising in north-facing escarpments, south of Minto Inlet on western Victoria Island. These ridges are separated by wide lowland valleys. The rocks are similar to those of the mineralized Coppermine series on the mainland.

A. L. Washburn

region around Dismal Lakes, west of Coppermine, was again investigated. In 1944 there were four prospecting parties in the area and over 100 claims were staked. Trenching and drilling of many of the lava flows revealed ores of chalcopyrite and bornite, but none has so far been found rich enough to warrant further development.

#### Reindeer

Until comparatively recent times the Western Arctic tundra area supported large herds of wild caribou. The failure of the caribou to migrate through this area in recent years resulted in distress to the local natives who had come to depend upon this animal as a source of food and clothing. In order to alleviate this precarious situation the Canadian Government decided to introduce reindeer, domesticated caribou, into the region.

Reindeer stock was obtained from western Alaska. The drive across northern Alaska and the northern tip of Yukon Territory to the east side of the Mackenzie River delta commenced in 1929. It was completed after many difficulties and adventures by the delivery in March, 1935, of 2,370 reindeer to a corral near Kittigazuit.<sup>(3)</sup> The herds graze along the Arctic Coast in summer where cool breezes decrease the mosquito annoyance. Reindeer feed at that time includes a variety of vegetation—grasses, shrubs, sedges, etc. The principal roundups are held in midsummer with further roundups in the winter season when surplus stock is slaughtered for meat and hides. The winter grazing areas are usually 50 to 75 miles inland where there is an abundance of reindeer moss.

The reindeer increased rapidly in numbers on the excellent grazing ground. Branch herds were started under Eskimo management near Anderson River in 1938 and 1940. However, a serious setback occurred in 1944 when the chief native herders with members of their families and a white supervisor lost their lives in the wreck of a native schooner. The reindeer were scattered and many animals lost. Those which could be recovered are being herded as a government unit at Anderson River. At the annual roundups held in the summer of 1947 there were more than 4,200 deer in the main herd.

*Using reindeer to haul sleds to the winter round-up site on the mainland near the Mackenzie River delta.*

N.W.T. and Yukon Services



(3) The Canadian Government's Reindeer Experiment Canada Year Book, 1943-44.

*Headquarters for the Reindeer Station, located on the edge of the tree-line in the Mackenzie River delta. The reindeer herds summer in this area on nearby Richards Island.*

N.W.T. and Yukon Services



located on the reindeer reserve and over 2,000 head in the Anderson River herd.

The Canadian reindeer experiment has faced many difficulties in its short existence. The natives of the Arctic areas of north-eastern Siberia and of Alaska herd reindeer and find that it gives them security in a region which lacks adequate food resources. One of the chief problems to be overcome is the Canadian Eskimo's indifference to the plan. People who have been nomadic hunters for generations cannot be turned into herders within a decade. Another main difficulty is that the herds are located near one of the best trapping grounds in Canada, the Mackenzie delta. The present economic attraction of the fur catch is greater than the promised security of reindeer herding.

#### Fur Production

The only exported resource of the Western Arctic is the white fox pelt. This valuable fur-bearer is native to the Arctic and roams about on the tundra lowlands and sea coast in great numbers in some years. Unfortunately for the Eskimo, however, the white fox, like other fur-bearers, has a cycle of abundance. (4) The peaks of the cycle are followed by one or two years when foxes are scarce. A year of general recovery is often followed by another peak, about four years after the preceding one. These cycles were somewhat difficult to follow in the early years of the Western Arctic fur trade. The frequent opening and closing of trading posts caused a fluctuation in catches which may not have been typical of the numbers of the animal.

The number of white foxes trapped in the Western Arctic has increased rapidly within

the past decade owing to the intensive trapping now practised by the Eskimos. Whereas trapping used to be a spare-time winter activity when traders first came into the area, it is now the major winter occupation. The total of 3,000 foxes trapped in 1934 was increased to 18,000 in 1939, and reached a record high of 30,000 white fox pelts in 1943. Even the catches of the low years of the cycle are now about equal to the peak years of 15 years ago.

Cambridge Bay supplies the major share of the Western Arctic white fox furs. This is partially due to the large catches which are brought to Cambridge Bay post for transhipment from King William Island and Perry River outposts. Coppermine also receives a large number of foxes during years of abundance. The mainland region produces an increasing number of red and cross foxes which are extending their ranges north of the tree-line into the tundra.

#### Population

The Western Arctic is thinly populated by both Eskimos and whites. There is a total of less than fifty white residents at the ten tiny post settlements in the region. Their occupations are those of fur traders, policemen, radio operators, weather observers, and missionaries. At one time there was a small group of white trappers operating along the coast and inland between Aklavik and Coppermine, but nearly all have now withdrawn. The mainland east of Coppermine is now included within the Arctic Islands Game Preserve, where hunting and trapping is restricted to Eskimos or half-breeds living the life of Eskimos. Thus,

(4) M. J. and J. L. Robinson, Fur Production in the Northwest Territories *Canadian Geographical Journal*, January, 1946.



The settlement of Cambridge Bay, Victoria Island. In foreground, unoccupied Anglican mission; centre, R.C.M.P. barracks; in distance, H. B. Company trading post and Eskimo tents.

J. L. Robinson

there are few occupations available for whites within the region.

The small Eskimo population of the Western Arctic totalled 1,582 according to the 1941 Dominion census. These few people are spread out over a region which measures 1,200 miles from Herschel Island to Boothia Peninsula. They inhabit the mainland north of the tree-line, and the southern part of Banks, Victoria, and King William Islands. The Western Arctic Eskimos may be subdivided into three chief groups, each of which differs in some respect from the others.\*

The most westerly group is found between Herschel Island and the former post at Baillie Island. A few families of this group

\* The author acknowledges information received from Insp. H. A. Larsen, R.C.M.P., and E. J. "Scotty" Gall, H. B. Company.

*Stanton, at the mouth of Anderson River, consists solely of a Roman Catholic mission.*

J. Jaworski



live farther east around the heads of Franklin and Darnley Bays. These people are primarily trappers, who have changed greatly from the primitive hunters of a few decades ago. Many of this group are Alaskan Eskimos who have migrated eastward along the coast following the opening of trading posts in the Mackenzie delta. Some Alaskans still come to the delta for the trapping season, and return to their hunting grounds on the Alaska coast in winter.

Most of the Eskimos of the Canadian coast west of Baillie Island migrate to the northern half of the Mackenzie delta in the spring to trap and shoot muskrats. Their harvest, combined with that of the Indians from the southern half of the delta, has totalled about 200,000 muskrats annually since 1935.

The specialized and wealthy trappers of Banks Island should also be included with these western Eskimos, since they return to Aklavik or "Tuktuk" each year. This small group of about forty Eskimos is well known because of its expensive schooners and modern equipment, but, unfortunately, it is often described as being typical of the whole Canadian Eskimo population. These Eskimos cross by schooner to Sachs Harbour, on the southwest side of Banks Island, and trap the area intensively during the winter. They live largely on white man's food while there, and spend little time hunting. Neither do they hunt seals for oil since they are well equipped with coal-oil stoves. In the summer, as soon as ice conditions permit, they return to

Aklavik with their catches, and relax there for a short time before freeze-up. Occasionally ice conditions have prevented their return to Banks Island, and they have spent a less profitable winter near Pearce Point.

The Eskimos of the delta coast live in driftwood or frame houses much of the year, unlike the remainder of the Canadian Eskimo population. These people are able to pick up driftwood which is brought down the Mackenzie River, whereas driftwood is seldom found in other Arctic regions. When they are travelling along trap-lines, however, they live in the typical Eskimo snow-block igloo, or in tents banked with snow-blocks.

One of the chief native foods of the western group of Eskimos in summer and autumn is white whale\* which is found along the coast as far east as Baillie Island. Usually organized hunts are held in July or August, and great numbers of these porpoises are shot as they travel in schools. The carcasses are then dragged to shore where they are cut up by the women. The meat is cached, sometimes in underground ice-houses dug into the permanently frozen sub-soil, but often it is dried on racks for winter use. The oil and blubber are stored in drums, later to be rendered down for use in lamps during the winter.

These people hunt off the floe edge part of the winter, but are not as efficient seal hunters as are other Eskimo groups. Many of them are inclined to live more on food obtained from the stores, or from the excess of the reindeer herds. Caribou are occasionally obtained inland from Stanton and the head of Franklin Bay, and are also hunted along the strip of Yukon coast near Herschel Island. The lack of caribou in this region has been alleviated by the introduction of reindeer to Richards Island.

The largest group of Western Arctic Eskimos is the central people who inhabit southern Victoria Island and the mainland region east of Coppermine to Perry River. They are separated from the more prosperous delta Eskimos by an almost uninhabited section of coast between Darnley Bay and Stapylton Bay. Some of these

\**Delphinapterus leucas* Pallas



J. Jaworski

*Shy Eskimo woman and girls at Minto Inlet, western Victoria Island. They wear the typical Mother Hubbard dresses in summer.*

Eskimos are great travellers, but their movements are quite irregular, varying from season to season. A family that may hunt at the headwaters of Burnside River one summer may be 300 miles away on the west coast of Victoria Island next summer.

It is difficult to generalize on the activities of the central group because they vary from year to year and from place to place. The Copper Eskimos who hunt inland southeast of Coppermine settlement prefer caribou to any other food, but also obtain fish from the lakes in early winter and spring. In the summer they travel about on the tundra seeking caribou and living in caribou-skin tents. The usual migration routes of the caribou are known, and as the animals begin to move southward in August, Eskimos collect at certain vantage points in the hope of killing large numbers. The meat is then either cached in the frozen ground and the place marked by caribou antlers, or it is dried in the sun for future use. The excess hides are usually traded at the post at Burnside Harbour.

As long as they have sufficient meat, or can hunt small caribou herds the Copper Eskimos may stay on the barren grounds throughout the winter, combining hunting and trapping. On the other hand if caribou



J. Jaworski

*Old Eskimo from western Victoria Island, with primitive native goggles, worn to prevent snow-blindness, pushed above his eyes.*

are lacking, the families will migrate to the coast in winter or spring and begin sealing. A similar group of Eskimos lives inland from Bathurst Inlet. They follow caribou most of the year, but come to the coast occasionally, chiefly for sealing in April. They are not as good nor as interested trappers as the Copper Eskimos. Many of these people who come out to the coast are primarily trappers and only hunt seal if they are hungry. Seals are shot or harpooned through breathing holes in the ice of Coronation and Queen Maud Gulfs. Large sealing camps may be established at favourite hunting sites, as for example, north of Coppermine, and near Kent Peninsula.

The few Eskimos who live around Prince Albert and Minto Inlets, on the west side of Victoria Island, depend on seals for food since caribou have become scarce on the island. They make inland trips into the hilly region during early winter to fishing lakes and also to look for caribou. They occasionally cross to southeastern Banks Island. These Eskimos have not become as specialized trappers as those farther south. No one lives on northern and eastern Banks Island nor along the northern and eastern coasts of Victoria Island.

The Eskimos living on southeastern Victoria Island, around Cambridge Bay, are one of the more prosperous and progressive

sections of the central group. They inhabit the coast from Wellington Bay around to Albert Edward Bay. Their seasonal round of activities is illustrative of the adaptation of the modern Eskimo to his environment.

In late August the Eskimos establish their autumn fishing camps at the mouths of rivers when the Arctic char begin running upstream. The fish are netted in large quantities for about three weeks and stored for winter dog feed. Early in September autumn sealing starts along the coasts and lasts until freeze-up. Since there are no kayaks in the Western Arctic the Eskimos use manufactured boats with gasoline engines. If this sealing period is good, the Eskimo supplies himself with much of his winter's food. During the remainder of October, after freeze-up, Eskimos return to the fishing streams or inland lakes. There they stretch their nets under the ice and catch more dog feed and food for winter's use. Storage is no problem since fish can be kept frozen.

The trapping season opens on November 1st, and for the remainder of the winter the Cambridge Bay Eskimo is an energetic trapper. The intensity of his trapping, however, depends upon the amount of seal meat which he is able to store or catch during the winter. If autumn sealing in the open water has been poor, he will seal again in November at breathing-holes through the ice. This is slow, patient work for a seal has several breathing holes and may not visit the one where the hunter awaits. A small group of families usually assemble at the early winter sealing camp, and any catch is shared equally. The snow houses are heated with small kerosene Primus stoves or the ancient stone seal-oil lamps.

While sealing is going on, some of the men will have laid out their trap-lines. Each man has his own region. His trap-line will extend probably forty to seventy miles and average about 200 traps. Most lines start at the coast and run inland over the low, snow-covered tundra. Sometimes whole families move along the trap-lines, visiting other families when their lines cross. If foxes are

abundant, pelts will be taken to Cambridge Bay and exchanged for white man's food, which permits the Eskimo to spend more time on the trap-line and less time sealing. The foods most commonly used are flour, rolled oats, rice, dried potatoes, and large quantities of tea.

In April the trapping season is over and families again assemble at favourite sealing sites along the south and southeast coast of Victoria Island. Since the seas are completely frozen over there is no floe-edge sealing, as in the Eastern Arctic, but only patient, cold waiting at breathing holes with gun and harpoon. This is the friendly visiting season of the Eskimos, called "*Paloktok*". Days are lengthening, temperatures are moderating, and if sealing is good, families move from one camp to another. Visitors are welcomed with feasts and dancing, and stories are sung of their respective winter's exploits.

Spring sealing lasts until early July, when the ice begins to break up. Eskimos then move their tents to the mouths of well-known fishing streams, where the spring run from the lakes is netted. As soon as the ice is clear of the coast, the boats which were beached in autumn are floated again. Eskimos gradually assemble around the Cambridge Bay post in August, bringing in the remainder of the winter's white foxes, and awaiting the arrival of the annual supply schooner. Once their new equipment and supplies are received, the happy people again disperse to their respective camps and another year's activities begin.

The Eskimos trading at Perry River are of two chief types. Those living along the coast are similar to the Cambridge Bay Eskimos. The major difference in activity is their autumn caribou hunt in late August on the mainland. These people inhabit the coast from Ellice River to Ogden Bay. There are very few Eskimos along the mainland coast between Bathurst Inlet and the eastern end of Kent Peninsula.

The second group of Eskimos who come to Perry River are the little-known inland people who live along Back River and around Garry Lake. This primitive group stays

inland most of the year, existing on caribou and fish, and is little concerned about trapping. They sometimes trade eastward at Baker Lake, or occasionally come to Perry River post, which is operated by an Eskimo, to trade for a few essential goods.

A larger primitive group of Eskimos, the Netsilik, are those inhabiting the region from Adelaide Peninsula to Pelly Bay and northward in Boothia Peninsula. They occasionally cross over the ice to southern and eastern King William Island. The Netsilik Eskimos may be sub-divided into several small groups of families who have little contact with one another and often trade in opposite directions. The people trading at Gjoa Haven, King William Island, live on the flat shores of Adelaide Peninsula and northeastward from Chantrey Inlet. The group on Boothia Penin-

*Eskimo boy from King William Island. He had been to school at Aklavik, spoke good English, and was a fine mechanic.*

J. L. Robinson



sula stay chiefly on the east side around Thom Bay, and traded at Fort Ross when that post was open. The Pelly Bay natives centre their activities around the mission there.

The Netsilik are primarily coastal dwellers. They live on fish most of the summer, obtained with their primitive fish spears and stone dams. Their winter sealing camps are small, usually consisting of five or six hunters. Their inland trips for caribou, in August or early September, are occasional and irregular. As a result, lack of suitable winter clothing is often one of their serious problems. As an isolated group, difficult to reach from either the west or east, the Netsilik have been less affected by white man's customs and utensils.

#### Summary

The Western Arctic is a little-known part of Canada, and has played a relatively unimportant role in the national economy of this country. Natural conditions, such as lack of soil and forests, cold climate and unfavourable ice conditions have placed many obstacles in the way of development. White fox pelts are the only resource exported from the area. The region has caribou on land and seals in the sea which support

a scattered Eskimo population. White residents are few, and live in small post settlements.

Access to this vast region is by air from Yellowknife to Coppermine, or via the Mackenzie River system to Aklavik and the Mackenzie delta or from the seaward approach by way of Bering Strait and Beaufort Sea. Its geographic location, remote from the principal centres of Canadian commerce and industry, has hindered the development of the Western Arctic in the past. Recent exploratory investigations by air, however, including the 1947 expedition to determine the exact location of the North Magnetic Pole, and mineral investigations in the Coppermine and other Western Arctic areas, have greatly increased our knowledge of the region. They indicate possible resources which may have a marked effect upon the strategic importance of the Western Arctic in relation to sub-Arctic Mackenzie District and the Eastern Arctic. These considerations may well outweigh an unfavourable natural environment, and enable the Western Arctic to assume an entirely new significance in the future development of Canada's northern territories.



*Eskimo woman and her daughter, western Victoria Island.*

J. Jaworski



## ***Along The Road To Bethlehem***

*by ERIC HARDY*

**F**ROM THE SLOPES of Mount Zion I looked out over the Valley of Hinnom, across the Hebron road that wanders from the ancient Jaffa Gate of Jerusalem, across the Plain of Ephraim—the “Valley of Giants”—where dwelt the children of Anak mentioned in the Book of Numbers. I was standing in the Canadian Catholic Church of St. Peter, a white limestone building with lovely, colourful murals. Immediately below me, on the Hill of Evil Counsel, stood the ruined house and wine press of the High Priest Caiaphas where the Jews first met to counsel against Jesus. There was the Pool of Siloam and the place where St. Peter heard the cock crow thrice, the event remembered by the Canadian fathers who built this beautiful church on the hillside above. I had met some of the French Franciscan monks who care for the Garden of Gethsemane and the tomb of the Virgin

Mary on the other side of the city walls. Now, from St. Pierre en Gallicant, I looked out over the dusty hills of white stone that showed me the way to Bethlehem, the Christmas pilgrimage. Not far away, on the other edge of Mount Zion, stood the white dome of the Church of the Dormition where a Canadian priest, a lover of birds, proudly showed me his aviary of canaries and goldfinches, and told me the tale of a little owl which came to his garden one night, here on the edge of the Holy City.

Three miles along the road to Bethlehem after leaving Jerusalem I reached the site of the Well of the Magi, where traditionally the Wise Men stopped to draw water at the wayside and saw the Star in the East reflected in the pool, as related by St. Matthew. A little farther on there stood beside the road a Greek convent of Mar Elias (Saint Elijah), marking the spot where Elijah rested

*At top:—Night comes quickly in the Holy Land and these Arabs on their camels reach the stony streets of Bethlehem in the brief twilight.*

*Rachel's Tomb on the road from Jerusalem to Bethlehem. The woman riding a donkey is going to the nearby Arab village of Beit Jala whose extensive olive orchards cover the distant hillside.*



on his flight to Horeb. The way over these Judean hills is marked by shrines and convents, mile by mile, all the way to Bethlehem.

What a strange mixture of East and West this road is, crowded with the cars of the pilgrims to Bethlehem. When my father visited the historic village in the early 1920's most of the travellers passed on donkey-back along a dusty highway. Here, along the modern tarred road, shining American and British automobiles or taxicabs sped past me almost every minute; noisy grey autobuses belonging to the Arab Bus Company hurried their passengers to Hebron. Military vehicles and police armoured cars tore along the road, while the camel track of dirt that borders every road in Palestine had its motley throng of Bedouins returning to their camps in the hills, and Hebron



*Above:—The Well of the Magi where tradition relates the Wise Men saw the reflection of the star.*

*Left:—Outside Bethlehem the stony hillside is broken by a few parched olive trees. The Arab woman unromantically draws water from the well in an old kerosene can.*

donkey-dealers mounted on their slender white asses. Occasionally I stepped aside to let gaunt, snobbish camels pass along the track, swinging their neck-bells noisily, while the dark-skinned owner sat straddle-legged high on the dromedary's withers. An Arab boy yelling with the fury of a madman frantically tried to keep a flock of fat-tailed sheep and black Nubian goats to the narrow way, while they wished to wander off the track and nibble the hard dry thistles which were the chief signs of plant life on the stony wayside. It is too hot in the Holy Land for the use of horses, but Bethlehem is high up on the tops of the Judean hills, nearly 3,000 feet above sea-level, and when I lived there the villagers passed frequently by my window, driving their goats to slaughter in Jerusalem, or riding on young donkeys.

This is a road of many fine views: turning back I could see the whole panorama of the holy city of Jerusalem, with its white domes and spires, the tall tower of the Young Men's Christian Association dominating them all, the old grey walls of the Citadel and, sprawling over the hillside to the west, the modern garden suburbs of Rehavia and the former Greek colony. Shortly after passing the monastery of St. Elijah, I came to a magnificent stone seat, a memorial to Holman Hunt, the famous British painter who here made some of his finest canvases. The holy village could be seen nestling behind a rise in the distant hills, away to the south. To the left of Bethlehem stood the flat tabletop of Jebel Fureidis, the Arabs' "Hill of Paradise", 2,676 feet high, where Herod the Great, after defeating Antigonus in 42 B.C., built his palace. In this hill, it is alleged, lies his undiscovered tomb although a cave on the edge of Jerusalem is always known as Herod's Tomb. (During the war it was used as an air raid shelter.)

Almost five miles from Jerusalem I reached the humble limestone and cement dome and square walls of Rachel's Tomb, a site accepted by the Christians, Jews and Moslems as marking the place where Jacob's



*The rooftops of Bethlehem which surmounts a stony hill. The towers of Christian monastery and Moslem mosque soar above the flat-roofed houses.*

wife died by the wayside giving birth to Benjamin. Here the road forked; to the right it continued to Hebron, the Moslem Arab city, to the left, it crossed the hills to Bethlehem, the Christian Arab village. The white towers and flat roofs of the churches and houses were already visible above the grey trees of the olive groves and the first flush of blossom on the almond orchards.

I followed the road that wound its stony way amongst those orchards on the hill-sides, with the pink flowers of the wild Roman geraniums growing by the wayside, the dark crows and the harsh-voiced ravens calling in the sky. Even at Christmas there were several wild flowers in the Bethlehem hills. The little pink meadow-saffron and the white winter crocus still flowered



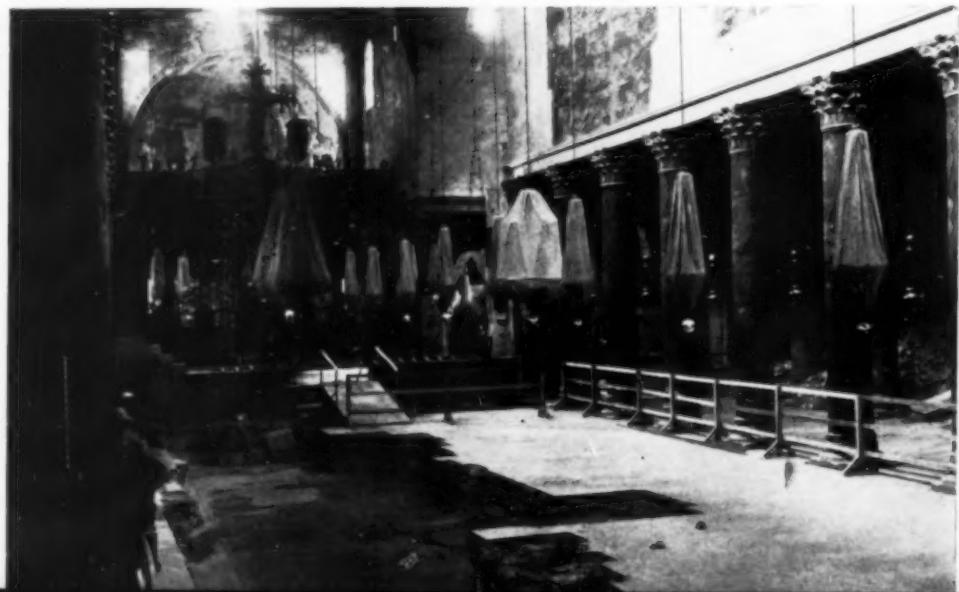
*The Grotto in the Church of the Nativity seen from the steps which lead down from the church above. In the distance is the stall, said to be the site of Christ's birth. The original manger was removed to Rome in the eighth century.*

amongst the rocks; mauve flowers of the Syrian golden-drop, tinged with yellow, hung amongst their coarse green foliage on the sides of the rough rocks, and the bright

yellow spring groundsel, one of the heralds of spring in Palestine, was beginning to bloom. The robin redbreast, a winter visitor to Palestine from Europe, was calling in the orchards with its loud, ticking cry; black redstarts, also here for the winter from eastern Europe, flew up into the branches with a show of chestnut from their tails. Mole-hills of the Syrian mole-rat dotted the hillsides.

I arrived suddenly, and rather unexpectedly, in Bethlehem. The road, skirting the precipitous face of the hill revealed a grand panorama; below me stretched the historic Field of the Shepherds, beyond it the deep, purple waters of the Dead Sea and in the distance rose the mountains of Moab in Transjordan. I was so entranced by the view that I was unaware of reaching the end of the road. I had arrived in the Manger Square. On one side stood the ancient, dark grey pile of the Greek Church of the Nativity with its tiny door like the eye of a needle, by which visitors must enter and through which donkeys and camels cannot pass. Above hung the historic bells of Bethlehem whose Christmas carillon has been broadcast to the world. Alongside lay the modern Roman Catholic Church. On the other side of the Manger Square (where the vehicles of the tourists awaited their passengers) rose the mean and narrow streets of the Arab village, a village I found to be occupied by carpenters and butchers, by skilled craftsmen carving souvenirs in mother-of-pearl for export to

*The interior of the Church of the Nativity showing the excavations made in 1934 when a beautiful mosaic floor was discovered some three feet below the existing floor.*



America and Europe, and by the monks and nuns of an Italian order.

This was the birthplace of Jesus and David, of Naomi, Elimelech, Boaz, Obed and Jesse. An Assyrian Christian church, exquisitely decorated inside with fresh murals, stood in the little market street above the Manger Square.

Bethlehem clusters on the tops of the white limestone hills like an ideal holiday resort. But it harbours the government prison for women offenders. The Arabs here are a little different from the neighbouring villages of Beit Jala, perhaps, because most of them are Christians; and many, I found, had lived in America for some part of their lives. The village is cleaner than others, the women are more neatly dressed and the Arabs are lighter-skinned, probably as a result of intermarriage with the Crusaders. Bethlehem means "The Place of Bread", and here the romance of Ruth and the young David took place in the cornfields.

The great Church of the Nativity, one of the oldest Christian edifices, was built in A.D. 330 by Helena, wife of King Constantine. The high ceiling is supported by forty-four ancient pillars, believed to have been brought from the Temple of Solomon. The oak used to restore the roof in 1482 (badly damaged by death-watch beetle some years ago) was the gift of King Edward IV of England. The austere interior is lit by gold and coloured candelabra. The Grotto of the Nativity, the accepted site of Christ's birth, is a crypt below the transept; a silver star in the marble paving bears the inscription *Hic de Virgine Maria, Jesus Christus natus est*. The crypt is some forty feet long by ten feet high, illuminated by great hanging lamps of gold and silver. The Oratory of the Manger, containing a marble model of the manger, is another sacred spot.

Several caves in the vicinity were revered as holy sites. One was alleged to be the place where the Holy family were warned of Herod's coming to kill the child Jesus, whence they fled from Bethlehem. Another cave was said to be where Herod's soldiers massacred the young children to make sure



*Dark, covered alleyways alternate with brilliant sunshine as wayfarer and loaded donkey jostle their way through the narrow streets of old Bethlehem.*

of destroying Jesus. The tombs of Josephus, one of the first historians of Palestine after Biblical days, and of St. Jerome who translated the Bible from Greek to Latin, were here. A chapel marking the place where Mary rested with her child is visited by barren women who hope to find fertility in the stone traditionally formed from the milk spilled by the Holy Mother. All over the hills of central Palestine I found similar caves in the limestone rocks, and during the summer I saw several Bedouin families still living in the caves at Ein Fara, only a few miles from Jerusalem and just beneath the village of Anata, birthplace of Jeremiah.

Down a dusty, stony lane that led me beside the Church of the Nativity, I went through the dirty, smelly little Arab village of Beit Sahur until the lane petered out in the stony fields, and I stood on the edge of a small cultivation of hard durra millet which is traditionally known as the Field of the Shepherds, where the Angel proclaimed Christ's birth. Ruins marked the site of a church built in 670 to commemorate the spot. This is visited by hundreds of tourists every Christmas Eve, but if it has



*The principal bell of the Latin church which forms part of the Church of the Nativity. Its Christmas chimes have been heard by countless people in broadcasts. The Judean wilderness lies beyond the belfry window.*

rained, as it does sometimes in winter, the chalky soil is very muddy and slippery.

I found the shepherds of the Bethlehem hills friendly, genial folk. The first I encountered were carrying their shotguns, for jackals had been troubling their sheep. Yes, the shepherds still watch their flocks—but mostly by day, for at night when the hyena as well as the jackal roam the hills around Bethlehem, they usually bring their flocks into the village pens for safety. The flocks had changed little since Biblical times; they

consisted of fat-tailed white sheep and lop-eared black goats, and the tinkling of the bells about the animals' necks made pleasant music as they moved about the hillsides. The hills of Bethlehem offer no lush green grass to the sheep; only coarse dry thistles, and other hard plants, grow here and there in land few western farmers would consider better than a brickfield. The shepherd led his mixed flock, at intervals throughout the day, to fresh grazing. The animals knew him well, and he knew them individually; the dogs he had were but curs to drive away the foxes and jackals, and unwelcome visitors. The cur is the only unfriendly thing in Bethlehem. Wolves and lions no longer roam the hills of Bethlehem, but they were there in ancient times for the remains of lions have been excavated from a Bethlehem garden and wolves still roam the northern hills. In winter I found the graceful red gazelle sharing the wild hills with the goats, and the long-legged buzzard soaring aloft on broad, brown, ragged wings. On the other side of the village, at Solomon's Pools, the Crusaders' historic water supply, I watched the wild duck—mallard and teal—come down to the waters. Until recent years, ibex also visited these hills in winter, but the degradations of hunters have had their effect.

Bethlehem is a small village of crowded streets and numerous archways, where the



*Greek Orthodox priests from the Church of the Nativity in Christmas Day procession.*

## ALONG THE ROAD TO BETHLEHEM

latticed windows of the houses are adorned with flower-boxes made from rusty kerosene and gasoline tins. The walls hang with the yellow flowers of golden henbane and the dark green foliage of pellitory-of-the-wall. The more ambitious gardeners and the monks have decorated some of the walls with the lovely flowering Bougainvillea to add its pink masses of blossom in summer, or with passion-flowers and purple morning glory. I found a plentitude of carpenters' shops in the narrow streets, working the olive wood for the souvenirs which fill most of the shops in the Manger Square. I was most intrigued by the skill of the carvers of Bethlehem. In little back-streets these men worked their small hand drills, their tiny chisels and hammers, to perfect some of the most exquisite inlaid work and intricate detail of pattern imaginable. The Arab is a skilled craftsman who works without any complicated machinery. In one house the men were finishing a great model in mother-of-pearl of the Mosque of Omar in Jerusalem, which was to be sent to the King of Transjordan. Before the war beautiful green and coloured shells were imported from New Zealand, but now the handsome shells from the Red Sea are used. The Bethlehem mother-of-pearl and olive wood carvings are known all over the world.

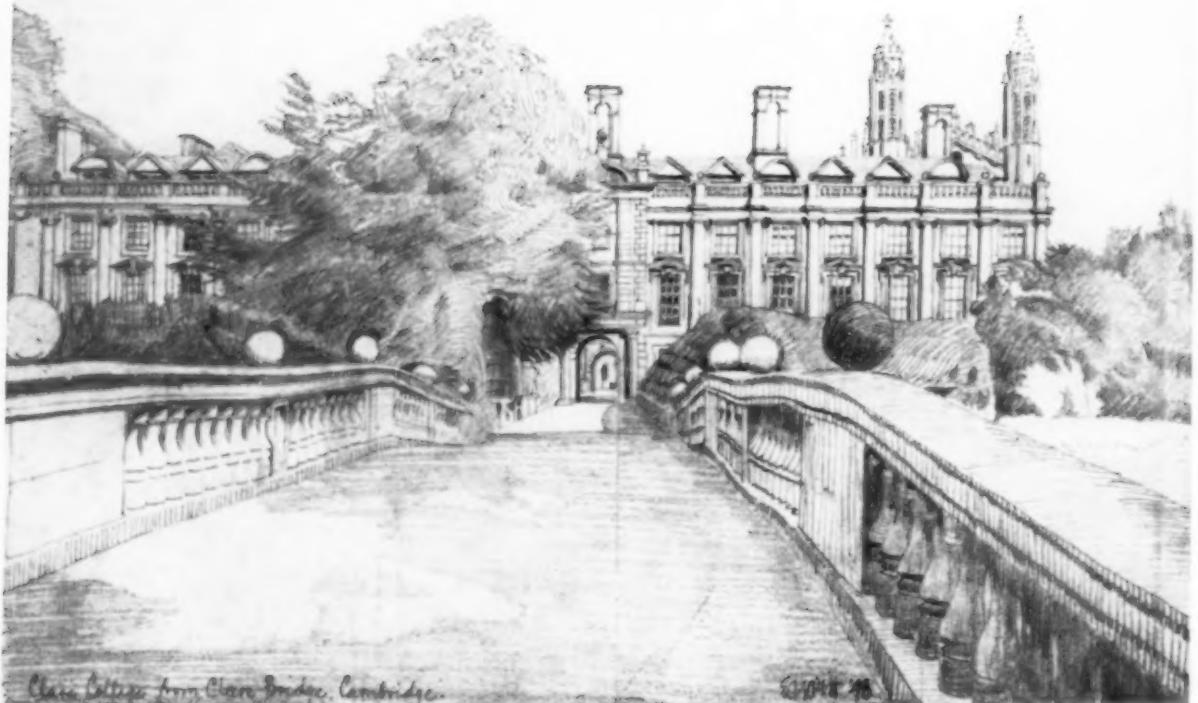
It was in the Church of the Nativity in Bethlehem that Baldwin was crowned the second King of Palestine by the Crusaders. It is interesting to relate here that one day,

when I was in the hills between Bethlehem and the Dead Sea, my Arab guide took me to the site of the unfinished Bishop Theodosius' monastery, and there, in a grotto or cave, an old Greek monk and an old Greek nun led the way by lighted taper to what they claimed is the oldest Christian church in the world. Their story was that when the first Church of the Nativity was destroyed, the ancient Greek preservers of Christianity fled to the hills and continued to worship in this cave in secret until they could return to Bethlehem and rebuild the church.

At night all is silent in the holy village; darkness comes early and with darkness the people retire for the night. A few naked electric bulbs glare their lights at the corner of the highway. No noisy cafe blares out the Cairo radio program which disturbs the streets of Jerusalem after dark. There is no muezzin to call his eerie chant and bid the faithful to Moslem prayer. Only in the distance the jackals on the hills may howl in chorus, a weird, unearthly outburst, which dies down again as suddenly as it arose. The stars always shine brightly in the Christmas sky, for the rains are infrequent, and if heavy, they are brief. The winter night is cold, sometimes bitterly cold, but the days are often as warm as an English summer, and my Christmas Day at Bethlehem, the only Christian town in Palestine, was spent beneath blue skies in warm sunshine.

*The children of Bethlehem are happy in the stone courtyards of their homes.*





## Some Cambridge Colleges

by EDGAR W. PITTS

Illustrations by the author

THE TOWN OF CAMBRIDGE is more ancient than the University. Castle Hill was probably the site of the Roman Camp, *Camboritum*, and on this William the Conqueror built Cambridge Castle. Early in its history Cambridge acquired a peculiar reputation for its fair—Stourbridge Fair. But it is with the foundation of various religious houses that the interest in the academic history of Cambridge begins. There was, for instance, the Augustinian Hospital of St. John, founded on a site not far from the bottom of Castle Hill, early in the 12th century; a new priory was established at Barn-

well about the same time; and the nunnery of St. Radegund stood on the site of Jesus College.

Exactly when students began to congregate at Cambridge it is impossible to say, but certainly there was a migration of students to the town in 1209 and by 1231 they were a prominent feature of Cambridge life, for in that year Henry III made a number of regulations for the punishment of "insolent clerks and scholars"; also for the prevention of excessive charges being made by townsmen for students' lodgings.

The mediaeval student, like his suc-

At top: — (1) Clare College from Clare Bridge

## SOME CAMBRIDGE COLLEGES

sors, was a turbulent character at times, and fierce town-and-gown riots are recorded. So long as the student lived in a hostel or in lodgings, it was difficult for the University to control him, and it was partly with a view to better discipline that the college system was devised. Hugh de Balsham, Bishop of Ely, made the first experiment by moving a number of secular scholars from the Hospital of St. John to two houses near St. Peter's Church in 1284. When he died, two years later, he left money which was used to build a hall, and so the nucleus of Peterhouse, the first Cambridge college, was formed.

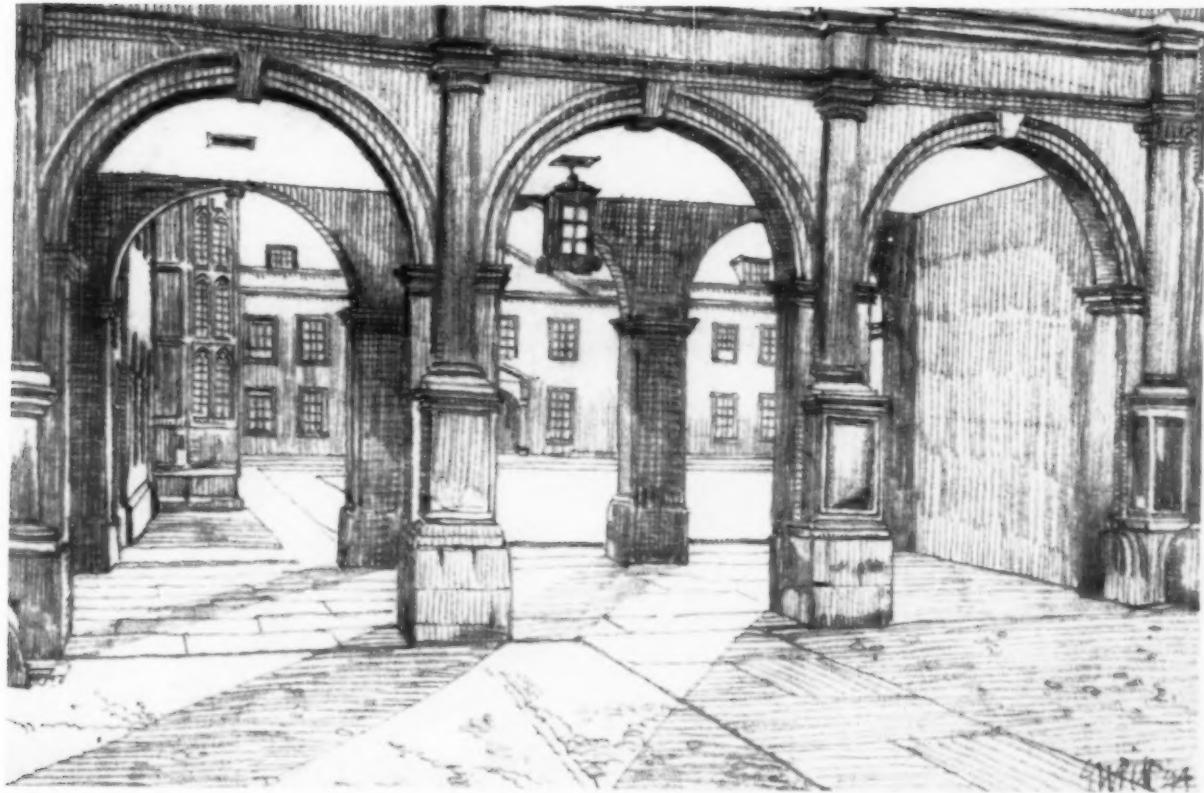
Forty years later, Clare College (originally University Hall) was founded, and this foundation was followed by several others in the course of the 14th century—Pembroke (1347), Gonville and Caius (1348), Trinity Hall (1350) and Corpus Christi (1352).

In Peterhouse (Sketch No. 2) little of the original building remains but the Combination Room, which preserves part of the old 15th century parlour and is a beautiful ex-

ample of collegiate architecture. One of the more modern windows of Peterhouse is associated with a famous anecdote. A bar is fixed across it, and when Thomas Gray, the poet, was living in Peterhouse in 1756 he wrote to London for a rope ladder, to be hung from the bar in case of fire. Two fellow-members hoaxed Gray by a false alarm of fire, and in consequence Gray migrated across the road to Pembroke.

Clare is the second oldest of the Cambridge colleges. It was founded in 1326 by Lady Elizabeth de Clare, youngest sister of Gilbert de Clare, fourth Earl of Gloucester, who was killed at the Battle of Bannockburn. Practically nothing is known of the earlier buildings, nor of the college's fortunes during the first 200 years of its history. On the 10th October, 1521, the Master's Lodge and the Treasury were burnt down and all the archives lost. The college was rebuilt; but unhappily the material used was the crumbling clunch which had been the curse of Cambridge builders throughout the Middle Ages. By the middle of the 17th

(2) *Peterhouse College*



century the fabric had weathered so badly that it was resolved to demolish the old court and to rebuild for the second time. These are the buildings we see today and which took 77 years in their erection. The eastern and southern sides and the lovely bridge over the river (see Sketch No. 1) were built between 1638 and 1642. The Civil War caused a cessation of building for 27 years. Between 1669 and 1676 part of the western range—that is, the river frontage—was added. After a further gap of seven years the northern side of the court, containing the hall, kitchen and buttery, was taken in hand; and during the first decade of Queen Anne's reign the quadrangle was completed by the erection of the Master's Lodge. The entrance gateway is covered by what is

probably with one exception the last fan-vault built in England. Its date is 1638.

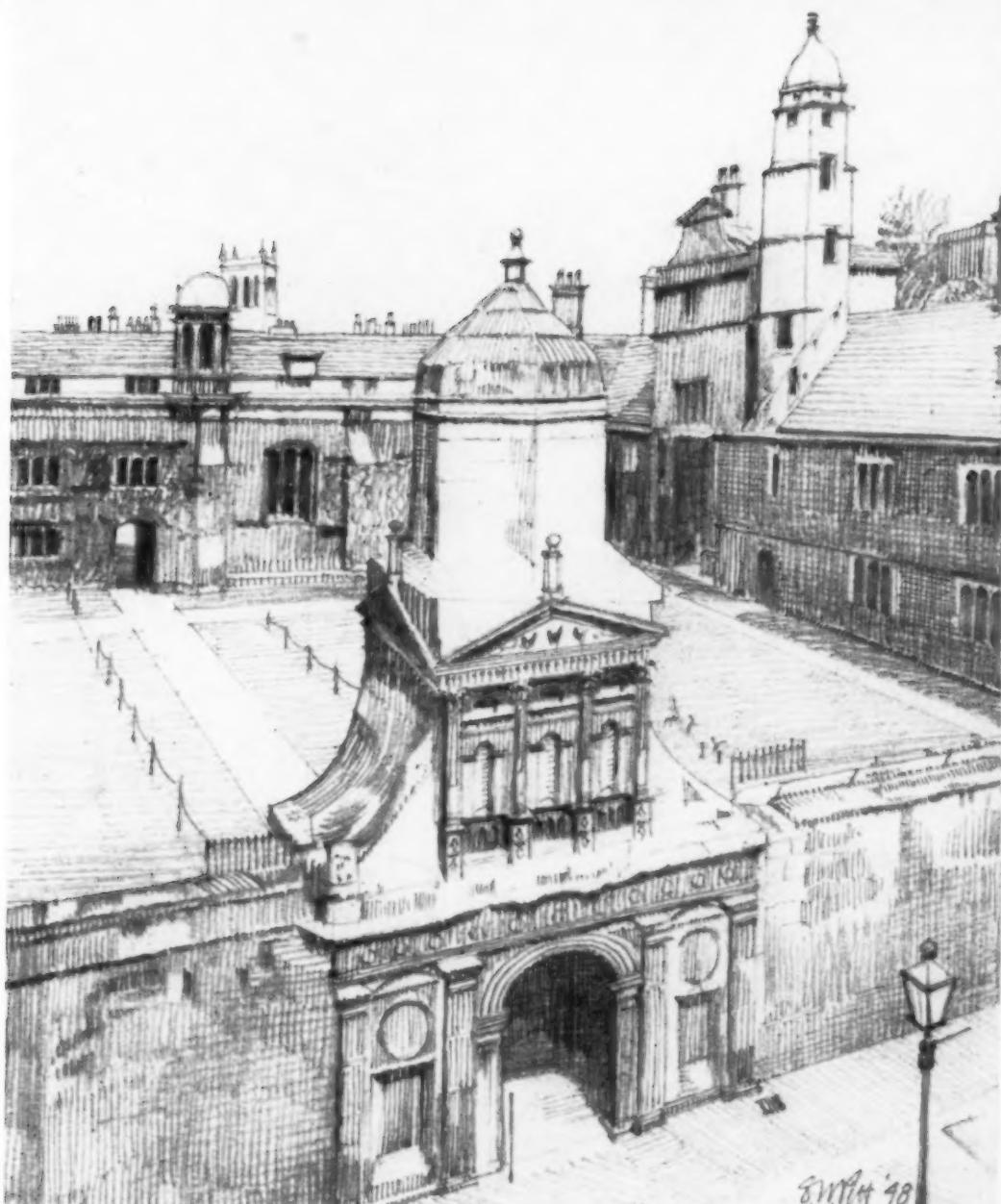
Clare possesses a magnificent collection of plate. The "Poison Tankard" is so called because the crystal in the cover is supposed to change colour instantly if poison has been put into the wine. Then there is the silver gilt "Falcon Cup" by an Antwerp goldsmith, and the "Serpentine Cup" of English workmanship. The chapel possesses a superb golden chalice. There is also an extraordinarily fine collection of 18th century plate—rose-water bowls, drinking cups, candlesticks, salt-cellars, sugar-castors, etc.

Pembroke was then a small college, and Gray was not the first poet to live there. Spenser came up to Pembroke in 1569, and an ancient mulberry tree in the college garden is still known as "Spenser's mulberry tree". Pembroke was the first college to have a chapel of its own, the foundress (Lady Mary de Valence, Countess of Pembroke) securing a licence for its building in 1355. More than 300 years later, however, another chapel was built at the expense of a Pembroke man—Matthew Wren, Bishop of Ely, the uncle of the architect Sir Christopher Wren whose earliest job was the designing of this chapel (see Sketch No. 3). William Pitt, described by his father as having "an ingenious mind and docility of temper" entered Pembroke in 1773.

Gonville Hall was founded in 1349 by Edmund Gonville, a parish priest in East Anglia. He is known as the founder of a college of secular priests at Thetford and was a close friend of Bateman, Bishop of Norwich and founder of Trinity Hall. The habitation of the society consisted of two stone houses breasting Trinity Lane. In course of time the chapel, hall, library, Master's Lodge and students' chambers were added to complete what is now Gonville Court. Much of the original fabric, buried beneath the ashlar facing laid on in the 18th century is still standing. The foundation was soon enriched by many benefactors, John of Ufford, son of the Earl of Suffolk, and William Lyndwood, greatest of English canonists and sometime Bishop of St. David's, presented stained-glass windows for the li-



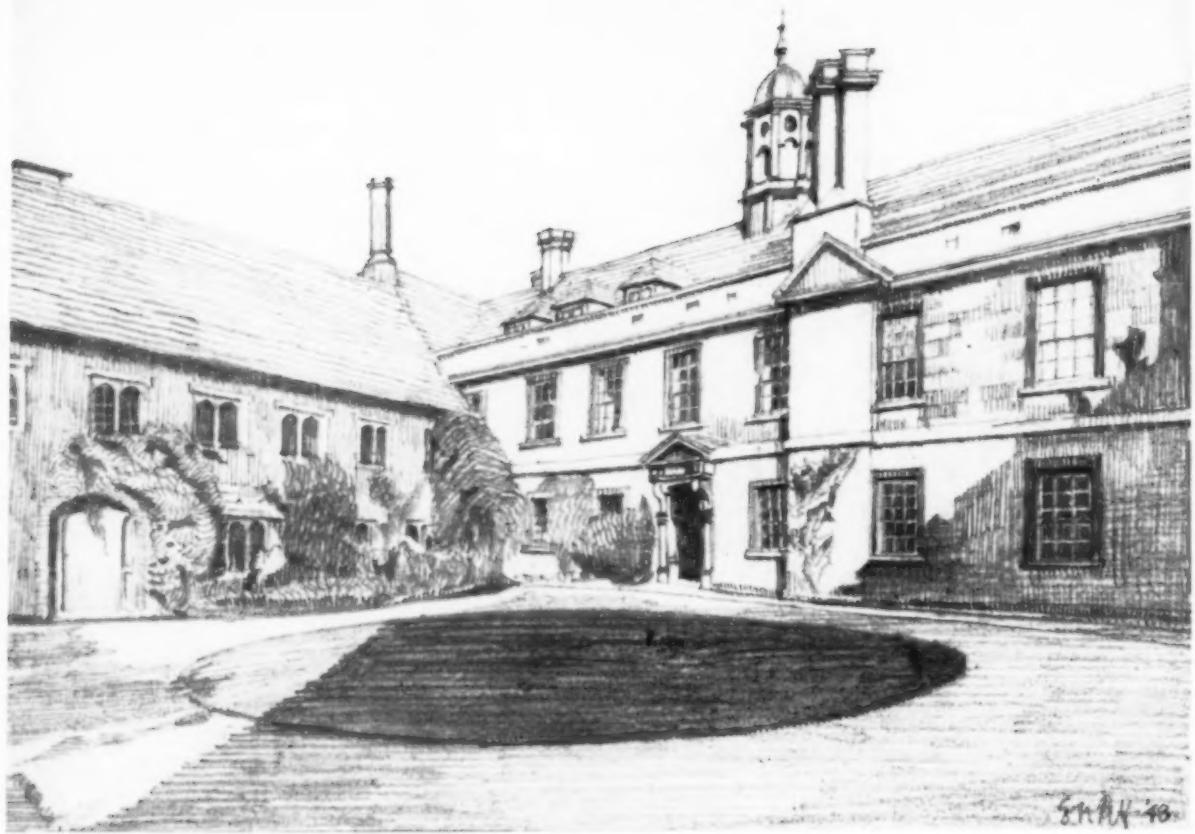
(3) *Pembroke College Chapel*

(4) *Gonville and Caius College*

brary. The Lady Elizabeth Clare provided for the building of the fourth side of the Court, and many benefactions followed.

The resident society consisted of some 25 or 30 men. From the Bursar's accounts made up for the half-year ending Lady Day, 1513,

it appears that there were: the Master, seven Fellows, three scholars, three or four servants and fifteen pensioners. The majority of the Fellows were priests. Of the pensioners one was a nobleman, two or three were Masters of Arts reading for the Doctorate in one



(5) *Trinity Hall*

of the higher faculties; the remainder apparently were all monks.

Gonville Hall fell on evil days at the time of the suppression of the religious houses. In 1558, John Caius, one of the most distinguished medical men of his time, re-founded the society under the name of Gonville and Caius\* College and was himself elected first Master under the new statutes. The buildings he put up have been very little altered, and his statutes remained in force for nearly 300 years. During the whole period of his mastership he took no salary, but presented books, plate, etc. in abundance.

The architecture of Caius Court is in the best Elizabethan tradition and the stone used came from the great abbey of Ramsey. Caius employed symbolism, and a sermon in stone is addressed to the young student who enters the college at the outset of his

undergraduate career by the Gate of Humility. He passes between high walls to the Gate of Virtue which leads him into Caius Court. Here he resides, concerning himself alike with the cultivation of virtue and the pursuit of wisdom. At the conclusion of his studies he passes out of the college by the Gate of Honour to take his degree in the Schools opposite. Unfortunately, the Gate of Honour was built of clunch and has weathered badly, but even in this state the building is one of the most beautiful pieces of Renaissance architecture in Cambridge (See Sketch No. 4).

Trinity Hall\*\* which immediately adjoins Clare is the only foundation in Cambridge which retains the old designation "Hall". It was founded by William Bateman, Bishop of Norwich in 1351. Throughout its long history the legal tradition has been dominant. For more than 300 years after its

\*Pronounced keys.    \*\*No connection with Trinity College, founded by Henry VIII in 1564.

foundation the Regius Professorship of Civil Law was, in effect, a Trinity Hall monopoly. The establishment in London of Doctors' Commons was effected by a Master of Trinity Hall and its history is an interesting chapter in the annals of the college.

The buildings of Trinity Hall have been much restored, refaced, and reconstructed and practically nothing remains of the ancient fabric. But the library (see Sketch No. 5) is built in a particularly attractive tone of early Elizabethan brickwork, with a high stepped gable in the Flemish manner facing the river. Among the original interior furnishings are the sloping desks with bookshelves above them, with some of the old chains still in working order. Trinity Hall is also fortunate in possessing one of the best collegiate histories ever written.

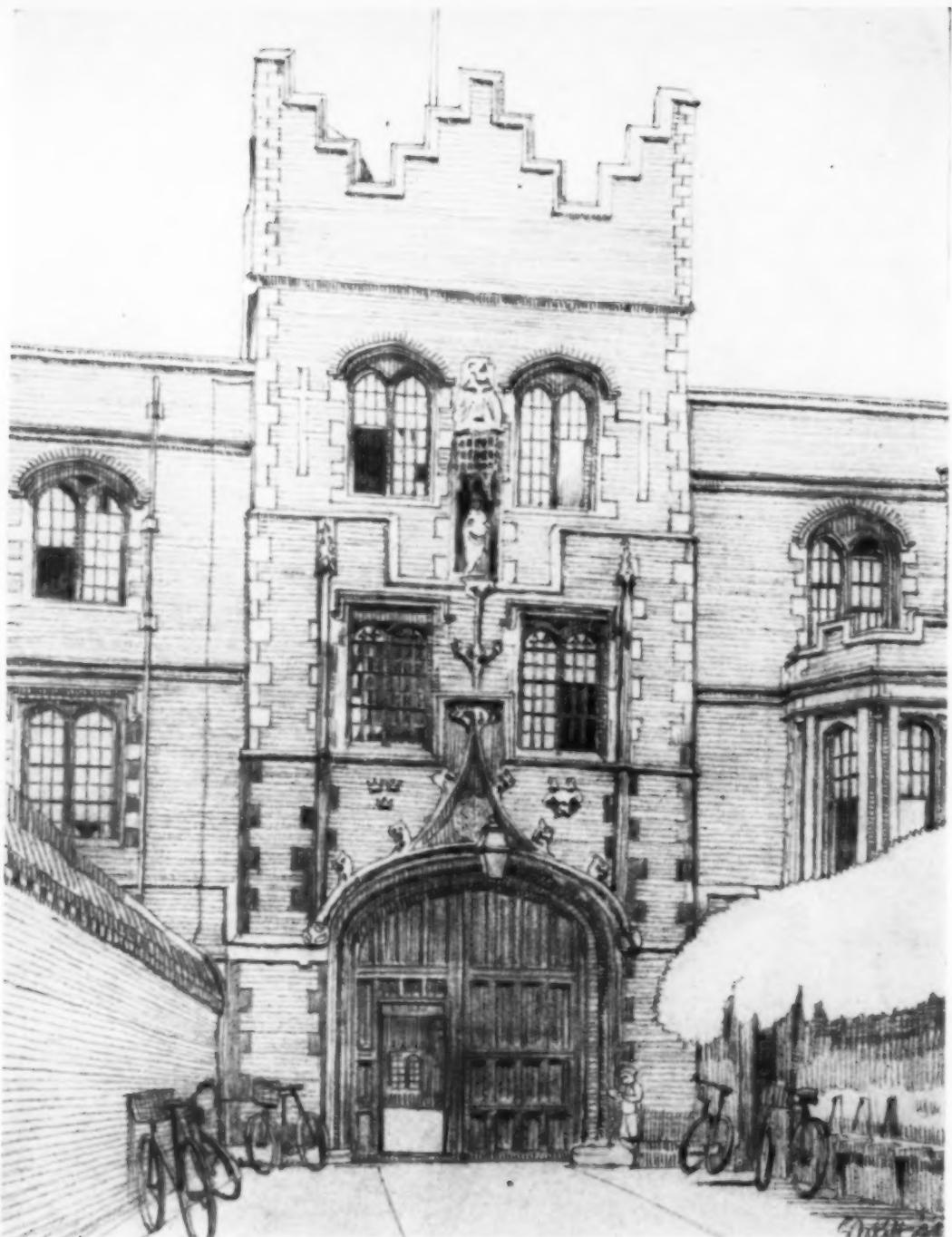
The most illustrious name in the college's annals is that of Stephen Gardiner, Bishop of Winchester, Chancellor of England, and Master of Trinity Hall from 1525 till 1552. His reputation as a persecutor, popularized in the works of Wilkie Collins and others, seems to rest upon no foundation in fact. According to A. L. Maycock "he was in no

way concerned in the execution of Bilney at Norwich in 1531. He vigorously opposed the arrest of Peter Martyr, the Protestant Regius Professor at Oxford, and supplied him with funds to enable him to return to the continent. He did not, as Bishop of Winchester, execute a single heretic in Mary's reign. In an age of unbelievable corruption in politics he consistently served both Church and State with disinterestedness and vision. His record, though far from stainless, is more honourable than that of any other statesman of his time".

Three sides of the Court of Corpus Christi remain as they were originally built. Changes of course have been made; the old hall has been converted into the college kitchen, and the Master's Lodging into students rooms; but the 14th century rooms and staircases remain, and overlooking them is one of the finest Saxon towers in England, that of the Church of St. Benet, which once served as a college chapel. Two famous men of Corpus Christi were Matthew Parker, afterwards Archbishop of Canterbury in Queen Elizabeth's reign, and Christopher Marlowe, the dramatist.

(6) *Corpus Christi College*

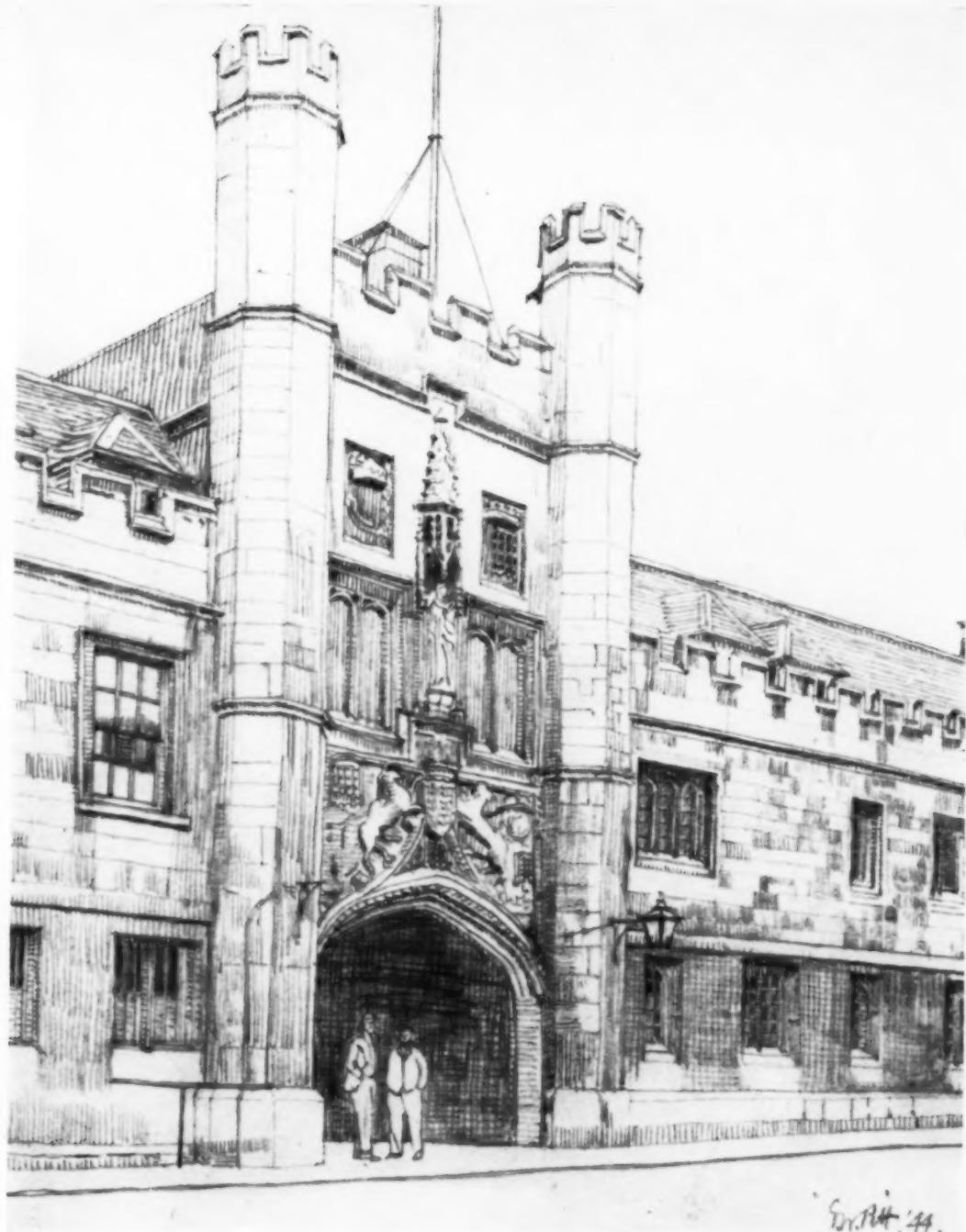




(7) *Gateway of Jesus College*

At the end of the 15th century the Priory of the Radegund dating from the early 12th century had fallen into decay, and the College of Jesus was founded in its place by John Alcock, Bishop of Ely. Jesus College (Sketch No. 7) is the only college in Cambridge whose buildings

retain the monastic plan. The beautiful Early English church used by the nuns of St. Radegund still serves as the college chapel, a great deal of restoration having been carried out in 1846. The transepts and nave now contain some fine glass of the pre-Raphaelite period. Archbishop



(8) *Gateway of Christ's College*

Cranmer was a Jesus man, and in later centuries two literary names stand out in the annals of the college, those of Laurence Sterne and Samuel Taylor Coleridge.

One of the greatest benefactors to Cambridge in the period of the Renaissance was Margaret Beaufort, the mother of Henry

VII. It was she who founded the first Professorship of Divinity, and in 1505 she founded Christ's College, which absorbed an earlier religious foundation known as "God's House". Christ's College has a beautiful garden. One tree, known as "Milton's Mulberry Tree", is specially famous. John Milton



Above: — (10) *The Pepysian Library  
Magdalene College*



came up to Cambridge in 1625 and in *Lycidas* paid his tribute to his contemporary at Christ's, Edward King. Sketch No. 8 shows the entrance gateway where one may note the arms of the foundress carved in the panels.

The other foundation of the Lady Margaret was St. John's College (Sketch No. 9), also founded on the site of an earlier religious foundation. The Hospital of St. John had been established early in the 12th century but fell into decay and was closed in 1510. In the following year John Fisher and other executors of the Lady Margaret laid the foundation of a magnificent college. The first two courts are splendid examples of Tudor brickwork. The first has lost most of its original character owing to the demo-

(9) *Gateway of St. John's College*

lition of the old chapel and Master's Lodge on the north side, but the second remains one of the finest in Cambridge. In particular the Combination Room, which fills the upper floor of one side of the court, is perhaps the most beautiful room Cambridge can show. Nearly 100 feet long, it has panelled walls and retains its original plaster ceiling. The third court contains the 17th century library and leads to the river, beyond which is the large group of Neo-Gothic buildings belonging to the early 19th century.

Magdalene College was founded in 1542 on the site of a Benedictine house at the foot of Castle Hill. It is one of the most charming of the small colleges, and its most famous

association is that with Samuel Pepys who bequeathed his library to Magdalene (Sketch No. 10). Today his books remain in their original cases, arranged exactly as they were in their owner's lifetime. Included in the library is the famous shorthand Diary, first deciphered in 1819.

Emmanuel College was founded by Sir Walter Mildmay in 1584 on the site of a Dominican friary and is a college of Puritan traditions. Its best architectural feature is the chapel and the cloisters (See Sketch No. 11) designed by Sir Christopher Wren. Above the cloisters is a famous picture gallery attached to the Master's Lodge. To Emmanuel all good Americans make a pilgrimage for it is the college of John Harvard.

(11) *The Cloisters of Emmanuel College*



*Cloisters of Emmanuel College, Cambridge*

\*The author wishes to acknowledge his indebtedness to Mr. A. L. Maycock for information regarding Clare, Gonville and Caius, and Trinity Hall.

## CANADIAN WILD ANIMALS—PART I

Photographs and Notes by W. V. CRICH



BLACK SQUIRRELS

### GREY SQUIRREL — *Sciurus carolinensis*

THE grey squirrel is known to everyone throughout its range. Even those who have not the opportunity to study it in its native haunts are quite familiar with it in city parks and gardens. When we see the long bushy tails, curved gracefully over their backs, we see how appropriately the scientific name fits the animals, for the family name of these squirrels is Sciuridae which means "shade tailed".

Squirrels occupy holes and hollows in tree trunks, or make globular leafy nests in the tops of trees. Nuts form their chief diet, but additions to the menu are grains, fruits, insects, fungi, and berries.

We often speak of black and grey squirrels, both of which are pictured here, but they are really the same; the black squirrel is merely a colour variation of the grey species. The grey squirrel is approximately twice the size of the red squirrel with which it is often seen.

Grey squirrels do a considerable amount of damage whenever they are plentiful. They raid orchards, where they drop the apples and pears to the ground and later bite into them only to get at the seeds. The cornfield is another place where they are quite destructive. They are also fond of young birds and birds' eggs, although in this respect they are not as serious offenders as the red squirrel.

As winter approaches, they lay up stores of seeds and nuts in holes of trees and in the attics of houses. Grey squirrels do not hibernate. During extremely cold and stormy weather they hide away in their holes, but they must obtain food afterwards, for, unlike the chipmunks, they are not able to subsist without eating for a lengthy period.

At the present time our squirrels are considered permanent residents in our parks and woodlots. According to early observers, grey squirrels at one time used to migrate in the autumn, generally in an easterly or southerly direction. This was carried out in a leisurely manner, not at all like the rapid exodus of our song birds. Information about these migrations is very meagre; no one knows just where they originated or where they ended.



Time out for lunch



FLYING SQUIRREL — *Glaucomys volans*

FLYING SQUIRRELS are nocturnal in their habits, and for that reason may be more plentiful than many people think. Once seen at close range they are much admired for their large, black, limpid eyes and their soft, velvety fur.

Flying squirrels are distinguished from the other members of the family by having extensions of the skin along the sides which are connected to the wrists and ankles of the animal. The tail is also broad and flat. When the flying squirrel leaps from some high position on a tree, the legs spread outward and the membrane along each side presents a broad, flat surface to the air. In this way the animal glides from tree to tree and is able to control its movements efficiently.

They reside in any convenient hole they may find in the trunks or branches of trees. They may also take over an old bird nest such as that of a Rose-breasted Grosbeak and remodel it (adding bark, grass or moss, etc.) to suit their own requirements.

CHIPMUNK — *Tamias striatus*





Above:—

COTTONTAIL RABBIT — *Sylvilagus floridanus*

THE cottontail rabbit is big game for the small boy.

The first litter of cottontails is born towards the latter part of April. The female, a short time before the young are born, scoops out a depression in the earth about six inches deep and four inches wide. This hollowed out "form", as it is called, is lined with dry grass and then with fur from her body. The young cottontails, which are born blind and helpless, are placed in this nest and covered over for a period of about two weeks. The mother returns from time to time and allows the young to nurse, but she stays in close proximity to the nest and guards it. Nests are so well concealed that they are discovered only by accident. The nest in the photograph was covered over again after the picture was taken and then observed from some distance through binoculars. No sign of the adult rabbit was seen until a crow, feeding in the vicinity, approached close to the nest. Then I observed the adult cottontail running down the hill and charging straight for the crow. After the crow was frightened away, the rabbit again assumed its lookout on the side of the hill.

Bottom left:—

CHIPMUNK — *Tamias striatus*

CHIPMUNKS are much admired for their attractive ways and beautiful coloration. They are to be found everywhere and are easily tamed. Once they recognize that you are friendly, they will come repeatedly for gifts of food. Their natural food is varied; it includes berries and mushrooms, as well as nuts and seeds, also insects and young birds and birds' eggs. They are provided with pouches in their cheeks, in which they gather food to be later hidden in some crevice or hole, for they live chiefly on the ground.

Chipmunks are naturally curious, and on the appearance of anything unusual they retreat to some safe vantage point from which to peek and look at it, apparently with the greatest interest.

Toward the end of the summer chipmunks work feverishly storing up food. Then, in October, they enter their burrows and hibernate through the winter until March.



#### RACCOON — *Procyon lotor*

RACCOONS inhabit most of the wooded parts of North America from the southern parts of Canada all the way to Panama.

The home of the raccoon is generally in a hollow tree, but sometimes they occupy a hollow log on the ground or even an old hawk's nest. The young are born in the southern part of Ontario in May, and are able to leave the den when about ten weeks' old. The raccoon is omnivorous, eating almost anything that comes along. He is very fond of eggs; during June, when turtles leave the water to lay their eggs in the sand, raccoons patrol the shores of ponds and marshes searching diligently for caches of turtle eggs. The raccoon is also very fond of fish, which he catches dexterously with his forepaws. Frogs and crayfish, insects and snails, as well as vegetable products, all form part of his diet. His most prized vegetable dish is sweet corn on the cob. This he prefers while it is still milky and sweet. On the hot nights of August and September, the raccoon's chief occupation is stripping back the husks of corn and disposing of the sweet, juicy kernels.

The raccoon is important for its fur, but it is more highly valued as a game animal by hunters, and "coon" hunting is indulged in more for the sport than for the value of the fur obtained.

#### RED FOX — *Vulpes fulva*

THE red fox inhabits nearly all parts of the Northern Hemisphere; and in this range it varies greatly in size and colour. It is generally a yellowish-red in colour, with darker back and shoulders; sometimes it may be totally black, with a white tip to its tail, or black with the tips of most of the hairs white, in which case it has a silvery appearance. These latter variations, which occur only occasionally in wild foxes, have been perpetuated by selective breeding and are now standard forms in ranch foxes.

For anyone who has seen young foxes playing around the mouth of a den, the sight is not soon forgotten. The red fox is the symbol of cunning, cleverness, and craftiness; and although he hasn't a friend among the farmers, he is still secretly admired by them and by the sportsmen who are allowed to enjoy a fox hunt when all other forms of hunting are illegal.

Foxes are nocturnal hunters. Some of their prey is taken by running it down, some by stalking, and some by the fox remaining motionless until its prey is within pouncing distance. Although the fox likes poultry, whether wild or domesticated, it also consumes rodents of every sort, as well as insects, frogs, and snakes.



RACCOONS (above)

RED FOX (below)



# Canadian Geographical Journal

## INDEX VOLUMES XXXVI AND XXXVII, 1948

Volume	Page	Volume	Page
A Funny Old Bird is the Pelican. Harriet Geithmann (Oct.)	XXXVII 171	Britain. <i>See</i> Those Thatched Roofs (June)	XXXVI 296
Africa. <i>See</i> Sisal Production in East Africa (July)	XXXVII 28	British Columbia. <i>See</i> New Caledonia, Fur Empire of the Northwest (Oct.)	XXXVII 158
Africa. <i>See</i> The West Suk of Kenya (Feb.)	XXXVI 94	British Columbia. <i>See</i> New Westminster (Jan.)	XXXVI 22
Africa. <i>See</i> Trades of Zanzibar (Aug.)	XXXVII 72	Buchanan, Donald W. Carl Schaefer (Apr.)	XXXVI 200
Alberta. <i>See</i> Calgary, City of the Foothills (Apr.)	XXXVI 154	Butler, A. J. Over One Million Geological Specimens (June)	XXXVI 274
Alcock, F. J. The Geological Society of America (June)	XXXVI 278	Butter Gods of Kum Bum, The. Harrison Forman (Jan.)	XXXVI 40
Along the Road to Bethlehem. Eric Hardy (Dec.)	XXXVII 260	By Any Other Name. P. E. Palmer (Mar.)	XXXVI 149
Ancient Ireland and Its Links with Canada. R. Wyse Jackson (Apr.)	XXXVI 172	Cabot Trail, The. Lyn Harrington (May)	XXXVI 204
Animals, Canadian. W. V. Crich Part I (Dec.) Grey Squirrel; Flying Squirrel; Chipmunk; Cottontail Rabbit; Raccoon and Red Fox.	XXXVII 278	Calgary, City of the Foothills. Robert J. C. Stead (Apr.)	XXXVI 154
Animals. <i>See</i> Observing the Wapiti (July)	XXXVII 36	Canada's Western Arctic. J. Lewis Robinson (Dec.)	XXXVII 242
Annual Meeting, The Canadian Geographical Society (Mar.)	XXXVI VII	Canadian Geographical Society, The. Annual Meeting (Mar.)	XXXVI VII
Arctic, Canada's Western. J. Lewis Robinson (Dec.)	XXXVII 242	Carl Schaefer. Donald W. Buchanan (Apr.)	XXXVI 200
Antarctic in World Affairs, The. Harry R. Lillie (June)	XXXVI 282	Central America, Report on. Herbert C. Lanks (Sept.)	XXXVII 100
Arctic Record 1910-11. Alex. Stevenson (May)	XXXVI 251	Ceylon. <i>See</i> Balsa—Ceylon's New Industry (Nov.)	XXXVII 230
Asia. <i>See</i> Balsa—Ceylon's New Industry (Nov.)	XXXVII 230	Ceylon. <i>See</i> The Royal Botanical Gardens, Ceylon (July)	XXXVII 40
Asia. <i>See</i> Butter Gods of Kum Bum (Tibet) (Jan.)	XXXVI 40	Chaudry, G. H. The West Suk of Kenya (Feb.)	XXXVI 94
Asia. <i>See</i> China's Moslemia (Sept.)	XXXVII 134	China. <i>See</i> Man in the Street, Peking (May)	XXXVI 222
Asia. <i>See</i> The Man in the Street, Peking (May)	XXXVI 222	China's Moslemia. Harrison Forman (Sept.)	XXXVII 134
Asia. <i>See</i> The Royal Botanical Gardens, Ceylon (July)	XXXVII 40	Commercial Winter Fishing in Manitoba. Peter Gordon (Jan.)	XXXVI 2
Automobile Industry in Canada's Economy. Lawrence F. Jones (Aug.)	XXXVII 86	Crich, W. V.	
Balsa—Ceylon's New Industry. J. R. T. Richardson (Nov.)	XXXVII 230	<i>Canadian Animals</i> Part I (Dec.)	XXXVII 278
Beacons of the Seven Seas. Arthur Gaunt (Jan.)	XXXVI 16	<i>Canadian Birds</i> Part I (July)	XXXVII 22
Bethlehem, Along the Road to. Eric Hardy (Dec.)	XXXVII 260	Part II (Aug.)	XXXVII 82
Birds, Canadian. W. V. Crich Part I (July) Ruby-throated Hummingbird; Rose-breasted Grosbeak; Black and White Warbler.	XXXVII 22	Part III (Sept.)	XXXVII 130
Part II (Aug.) American Bittern, Green Heron.	82	<i>Canadian Flowers</i> Part I (July)	XXXVII 17
Part III (Sept.) Cedar Waxwing, Red-headed Woodpecker, Yellow-bellied Sapsucker.	130	Part II (Aug.)	XXXVII 66
Birds, Canadian. The White Pelican (Oct.)	XXXVII 171	Dakin, Laurence. The Kauri Pine (Apr.)	XXXVI 192
Britain, National Parks for, Part I (Feb.)	XXXVI 72	"December", (Poem). Wilson MacDonald (Dec.)	XXXVII 238
Britain, National Parks for, Part II (Mar.)	XXXVI 138	Desbarats, G. H. Surveying on the Hamilton River, Labrador (Nov.)	XXXVII 214
Britain. <i>See</i> Over One Million Geological Specimens (June)	XXXVI 274	Fishing, Commercial Winter, in Manitoba. Peter Gordon (Jan.)	XXXVI 2
Britain. <i>See</i> Some Cambridge Colleges (Dec.)	XXXVII 268	Flowers, Canadian. W. V. Crich Part I (July) White Water Lily;	
Britain. <i>See</i> The Scottish "Doocot" (Nov.)	XXXVII 210	Hybrid Yellow Lady's Slipper; Showy Lady's Slipper; Shinleaf; Yellow Dog's-tooth Violet.	17
Britain. <i>See</i> The Spires and Towers of Oxford (Oct.)	XXXVII 166	Part II (Aug.) Black-eyed Susan; Ox-eye Daisy; Bloodroot; Jack-in-the-Pulpit; Marsh Marigold; Foam-flower; Canada Violet; Bunchberry.	66
Britain. <i>See</i> The Warwickshire Avon (May)	XXXVI 242	Forman, Harrison. Butter Gods of Kum Bum (Jan.)	XXXVI 40
		Forman, Harrison. China's Moslemia (Sept.)	XXXVII 134
		Fort William, Great Rendezvous. Corday Mackay (Jan.)	XXXVI 9

Volume	Page	Volume	Page
Fredericton—Centennial City. Fred H. Phillips (Feb.)	80	National Parks for Britain—Part II (Mar.)	138
Gaunt, Arthur. Beacons of the Seven Seas (Jan.)	16	Neilson, James M. The Mistassini Territory of Northern Quebec (Oct.)	144
Geithmann, Harriet. A Funny Old Bird is the Pelican (Oct.)	171	New Brunswick. <i>See Fredericton</i> (Feb.)	80
Geographical Bureau (Jan.)	39	New Caledonia, Fur Empire of the Northwest. Corday Mackay (Oct.)	158
Geography Summer School. Phillip E. Uren (Mar.)	130	Newcombe, Margaret A. League of Red Cross Societies Promotes Peace of World (Mar.)	144
Geological Society of America, The. F. J. Alcock (June)	278	Newfoundland. G. A. Mercer (Mar.)	104
Geological Specimens, Over One Million. A. J. Butler (June)	274	New Westminster, B.C. T.R. Weir (Jan.)	22
Glacier Observations in the Canadian Cordillera. Victor Meek (Nov.)	190	New Zealand. <i>See The Kauri Pine</i> (Apr.)	192
Gordon, Peter. Commercial Winter Fishing in Manitoba (Jan.)	2	New Zealand, The Kiwi of (Nov.)	236
Great Divide, The. R. J. C. Stead (June)	254	Nova Scotia. <i>See The Cabot Trail</i> (May)	204
Great Rendezvous, Kaminitikwia—Fort William. Corday Mackay (Jan.)	9	Observing the Wapiti. Albert Potvin (July)	36
Hardy, Eric. Along the Road to Bethlehem (Dec.)	260	Old Crow's Village. Douglas Leechman (July)	2
Harrington, Lyn. Riding Mountain National Park (Apr.)	180	Ontario. <i>See The Penetanguishene Peninsula</i> (Sept.)	118
Harrington, Lyn. The Cabot Trail (May)	204	Over One Million Geological Specimens. A. J. Butler (June)	274
Hoan, Daniel W. St. Lawrence Seaway—Navigation Aspects (Feb.)	52	Palmer, P.E. By Any Other Name (Mar.)	149
Hoppé, E. O. Trades of Zanzibar (Aug.)	72	Paterson, L. S. The Scottish "Doocot" (Nov.)	210
Ireland, Ancient, and Its Links with Canada. R. Wyse Jackson (Apr.)	172	Peking, The Man in the Street. Hedda M. Morrison (May)	222
Jackson, R. Wyse. Ancient Ireland and Its Links with Canada (Apr.)	172	Penetanguishene Peninsula. William C. Wonders (Sept.)	118
Jones, Lawrence F. The Automobile Industry in Canada's Economy (Aug.)	86	Phillips, Fred H. Fredericton—Centennial City (Feb.)	80
Kaminitikwia—Fort William, Great Rendezvous. Corday Mackay (Jan.)	9	Pitt, Edgar W. Some Cambridge Colleges (Dec.)	268
Kauri Pine, The. Laurence Dakin (Apr.)	192	Pitt, Edgar W. The Warwickshire Avon (May)	242
Kenya, the West Suk of. G. H. Chaundy (Feb.)	94	Potvin, Albert. Observing the Wapiti (July)	36
Kiwi of New Zealand, The. (Nov.)	236	Power Potentialities of the St. Lawrence River. Dept. of Transport (Feb.)	70
Krvine, J. D. Sisal Production in East Africa (July)	28	Quebec. <i>See The Mistassini Territory of Northern Quebec</i> (Oct.)	144
Labrador, Surveying on the Hamilton River. G. H. Desbarats (Nov.)	214	Record (gramophone), The Story of Robert G. Simpson (Oct.)	174
Lanks, Herbert C. Report on Central America (Sept.)	100	Red Cross Societies, League of. Margaret A. Newcombe (Mar.)	144
League of Red Cross Societies Promote Peace of World. (Margaret A. Newcombe (Mar.)	144	Report on Central America. Herbert C. Lanks (Sept.)	100
Leechman, Douglas. Old Crow's Village (July)	2	Richardson, J. R. T. Balsa—Ceylon's New Industry (Nov.)	230
Lillie, Harry R. The Antarctic in World Affairs (June)	282	Richardson, J. R. T. The Royal Botanical Gardens, Ceylon (July)	40
MacDonald, Wilson. "December" (Poem) (Dec.)	238	Riding Mountain National Park. Lyn Harrington (Apr.)	180
Mackay, Corday. Great Rendezvous, Kaminitikwia—Fort William (Jan.)	9	Robinson, J. Lewis. Canada's Western Arctic (Dec.)	242
Mackay, Corday. New Caledonia, Fur Empire of the Northwest (Oct.)	158	Rocky Mountains. <i>See Glacier Observations in the Canadian Cordillera</i> (Nov.)	190
Man in the Street, Peking. Hedda M. Morrison (May)	222	Rocky Mountains. <i>See The Great Divide</i> (June)	254
Manitoba, Commercial Winter Fishing in. Peter Gordon (Jan.)	2	Rocky Mountains. <i>See The Yellowhead Pass</i> (Aug.)	50
Manitoba. <i>See Riding Mountain National Park</i> (Apr.)	180	Royal Botanical Gardens, Ceylon. J. R. T. Richardson (July)	40
Meek, Victor. Glacier Observations in the Canadian Cordillera (Nov.)	190	Schaefer, Carl. Donald W. Buchanan (Apr.)	200
Mercer, G. A. Newfoundland (Mar.)	104	Scottish "Doocot", The. L. S. Paterson (Nov.)	210
Mistassini Territory of Northern Quebec. The. James M. Neilson (Oct.)	144	Simpson, Robert G. The Story of a Record (Oct.)	174
Morrison, Hedda M. The Man in the Street, Peking (May)	222		
National Parks for Britain—Part I (Feb.)	72		

	Volume	Page		Volume	Page
Sisal Production in East Africa. J. D. Krivine (July).....	XXXVII	28	Tibet. <i>See</i> Butter Gods of Kum Bum. Harrison Forman (Jan.).....	XXXVI	40
Some Cambridge Colleges. Edgar W. Pitt (Dec.).....	XXXVII	268	Trades of Zanzibar. E. O. Hoppé (Aug.).....	XXXVII	72
Spires and Towers of Oxford, The. J. D. U. Ward (Oct.).....	XXXVII	166	Uren, Philip E. Geography Summer School (Mar.).....	XXXVI	130
St. Lawrence Seaway—Navigation Aspects. Daniel W. Hoan (Feb.).....	XXXVI	52	Wapiti (Elk), Observing the. Albert Potvin (July).....	XXXVII	36
St. Lawrence River, Power Potentials. Dept. of Transport (Feb.).....	XXXVI	70	Ward, J. D. U. The Spires and Towers of Oxford (Oct.).....	XXXVII	166
Stead, Robert J. C. Calgary, City of the Foothills (Apr.).....	XXXVI	154	Ward, J. D. U. Those Thatched Roofs (June).....	XXXVI	296
Stead, Robert J. C. The Great Divide (June).....	XXXVI	254	Warwickshire Avon, The. Edgar W. Pitt (May).....	XXXVI	242
Stead, Robert J. C. The Yellowhead Pass (Aug.).....	XXXVII	50	Weir, T. R. New Westminster, B.C. (Jan.).....	XXXVI	22
Stevenson, Alex. Arctic Record 1910-11 (May).....	XXXVI	251	West Suk of Kenya, The. G. H. Chaundy (Feb.).....	XXXVI	94
Story of a Record (gramophone). The. Robert G. Simpson (Oct.).....	XXXVII	174	Wonders, William C. The Penetanguishene Peninsula (Sept.).....	XXXVII	118
Surveying on the Hamilton River, Labrador. G. H. Desbarats (Nov.).....	XXXVII	214	Yellowhead Pass, The. Robert J. C. Stead (Aug.).....	XXXVII	50
Those Thatched Roofs. J. D. U. Ward (June).....	XXXVI	296	Yukon. <i>See</i> Old Crow's Village (July).....	XXXVII	2
			Zanzibar, Trades of. E. O. Hoppé (Aug.).....	XXXVII	72

&lt;&lt;&lt;

&gt;&gt;&gt;

**EDITOR'S NOTE-BOOK**

Wilson MacDonald, famous Canadian poet and well known to university and school audiences in the United States as well as Canada, contributes in this issue a new poem entitled "December". Readers will recall with pleasure Mr. MacDonald's stirring poem "The Song of the Ski", published in our January 1945 issue.

\* \* \*

J. Lewis Robinson is well known to readers of the Journal for his comprehensive articles on Canada's Northland. After graduating from the University of Western Ontario and Syracuse University, Dr. Robinson did post-graduate work in geography at Clark University, where he lectured in cartography and meteorology. He was recalled by the Canadian Government in 1943 to take over geographical work for the Bureau of Northwest Territories and Yukon Affairs of the Department of Mines and Resources. Dr. Robinson is now Associate Professor in charge of geography courses in the Department of Geology and Geography at the University of British Columbia. He has spent many seasons on field work in the North and his present article on Canada's Western Arctic is based on field work carried out during the summer of

1947 when he was geographical observer with the joint Mines and Resources—R.C.A.F. North Magnetic Pole Survey.

\* \* \*

Eric Hardy, an English naturalist and writer, served as a captain in the Royal Corps of Signals during the recent war, first with the Army Pigeon Service, and later in Palestine and the Middle East. In 1945 and 1946 he was Education Officer for Jerusalem East Zone. He founded and was honorary secretary of the Jerusalem Naturalists' Club, editing its bi-monthly bulletins and leading several expeditions collecting specimens for museums. He is now honorary editor of the English "Nature Lover Magazine".

\* \* \*

For biographical sketch of E. W. Pitt see May 1948 issue of *Canadian Geographical Journal*.

\* \* \*

For biographical sketch of W. V. Crich see July 1948 issue.

\* \* \*

**OMISSION—**

The portrait of Sir Alexander Mackenzie by Sir Thomas Lawrence, from which the photograph on page 160 of the October 1948 issue was taken, is in the collection of the National Gallery of Canada.

